TOWARDS ASYMMETRIC PARTNERSHIP MANAGEMENT

AGAINST THE BACKGROUND OF

CORPORATE ENTREPRENEURSHIP AND OPEN INNOVATION LITERATURE

A dissertation presented by

Martin P. Allmendinger, M. Sc.

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Supervisor: Univ.-Prof. Dr. Andreas Kuckertz

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Supervisor: Univ.-Prof. Dr. Andreas Kuckertz

Second Reviewer: Univ.-Prof. Dr. Bernd Ebersberger

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Martin P. Allmendinger

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"*This field matters because in the new disruptive economy solutions to the innovative challenges that confront tomorrow's managers will be dependent upon the results of the corporate entrepreneurship research that emanates from our scholars*" (2017, p. 476).

Donald F. Kuratko

Abstract

The disruptive force of digitalisation and the acceleration of the innovation markets are radically changing the way in which large and established organisations innovate and how they bring new solutions to existing and new markets.

Large corporate firms have started to rethink their innovation strategy by enabling partnerships with new and smaller innovation partners such as highly-skilled and technology-driven startups. To leverage the full innovation market potential, large firms seek opportunities and mechanisms to effectively manage these asymmetric partnerships and to ultimately generate new strategic competitive advantages.

Based on the corporate entrepreneurship and open innovation literature, this dissertation offers broad and deep insights on the still under-researched phenomenon of Asymmetric Partnership Management. By including the perspectives of both partners, this manuscript highlights the necessity for large corporate firms to reconsider their collaborative innovation in terms of the individual needs of startup entrepreneurs.

The results of the empirical studies demonstrate that large firms are willing to learn from the startup community and proactively pave the way for asymmetric partnerships by testing and maintaining new structures, processes, and activities. Large corporate firms invest in a startup-oriented partnership capability to increase the effectiveness of their Asymmetric Partnership Management and to ultimately become an innovation partner of choice. However, startup entrepreneurs are more willing to enter asymmetric partnerships when they perceive large corporate firms to be trustworthy based on different partner selection criteria.

The findings of this dissertation contribute to entrepreneurship, innovation, partnership, and trust research and have practical implications for the future orientation and design of innovation and partner management of large firms. In addition to innovation managers, startup entrepreneurs can benefit from these insights and learn to improve their collaborative behaviour and to proactively realise the full potential of innovation-oriented partnerships.

1 Introduction of dissertation

1.1 Towards Asymmetric Partnership Management

From entrepreneurship to Corporate Entrepreneurship

In the last three decades Corporate Entrepreneurship (CE) has increasingly attracted the scientific community as an independent research stream (Dess et al., 2003; Phan et al., 2009; Kuratko, 2017) and has also caught the attention of the business sector (Garvin & Lévesque, 2006; Finkle, 2012). Its relevance can primarily be explained through its link to the discipline of strategic management (Burgelman, 1983; Barringer & Bluedorn, 1999) and its ultimate goal to maintain and develop an entrepreneurial orientation within established organisations (Miller, 1983; Covin & Slevin, 1991; Lumpkin & Dess, 1996).

Some authors present *CE* as the counter-concept of *independent entrepreneurship*. The latter is described as the process where an individual or group of individuals, acting independently of any association with an existing organisation, create a new organisation (Sharma & Chrisman, 1999). However, both research subjects have in common that their relation to the overall research discipline of entrepreneurship and their theoretical origin on the individual level, the entrepreneur (Schumpeter, 1934; Miller, 1983). The entrepreneur has a long tradition in history and consequently has been analysed by economic literature from different viewpoints (Hébert & Link, 2006a; Berger & Kuckertz, 2016; Schulte-Holthaus, 2018). The first known identity came from Richard Cantillon in 1755 who saw entrepreneurs as economic agents, who "engage in market exchanges at their own risk in order to make a profit" (Hébert & Link, 2006a, p. 275).

In the twentieth century, the discipline of entrepreneurship has mainly been influenced by Joseph Alois Schumpeter. Schumpeter describes an entrepreneur as an innovator who implements change within markets through carrying out new resource combinations. His definition strongly conceptualises entrepreneurship as centred around the entrepreneur as independent individual. Bygrave and Hofer (1992) emphasise the aspect of organisational creation and development as a result of an entrepreneur's previous activities. Consequently, they describe him or her as, "someone who perceives an opportunity and creates and organisation to pursue it" (1992, p. 14).

Collins and Moore (1970) differentiate between the independent and administrative entrepreneur. The independent entrepreneur acts in terms of Bygrave and Hofer (1992) and

ultimately builds a completely new and independent organisation. The administrative entrepreneur, also designated a corporate entrepreneur (Vandermerwe & Birley, 1997) or intrapreneur (Pinchot, 1985) in contrast acts within existing organisational structures, follows new entrepreneurial functions and undertakes entrepreneurial activities (Shane & Venkataraman, 2000). This entrepreneurial role can be fulfilled by different organisational function owners such as leading or non-leading managers in R&D, innovation, or business development functions (Miller, 1983). Miller (1983) also argues that pressure of growth and the related increase in complexity within established organisations require the execution of entrepreneurial activities to be able to continuously perceive new opportunities.

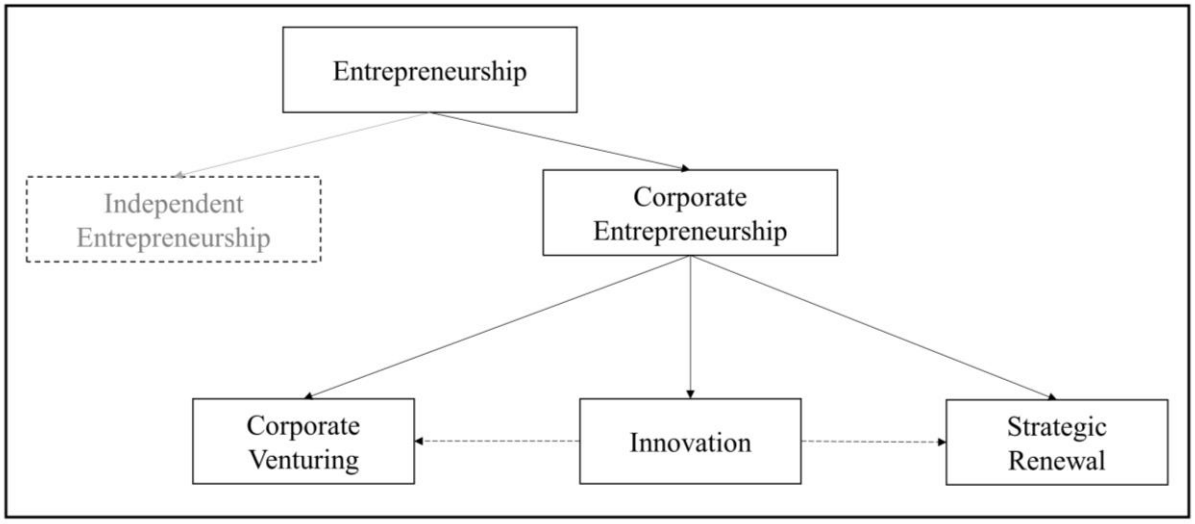
Therefore, CE follows the basic idea that a similar pattern of behaviour can be observed between a new independent organisation and an existing organisation as a whole. Accordingly, for the majority of researchers, CE transfers the entrepreneurial behaviour of independent entrepreneurs from the individual level to the organisational level (Covin & Slevin, 1991). Entrepreneurship literature provides several descriptions of CE, making it a very heterogenic research subject and non-transparent field (Phan et al., 2009; Arz, 2017). Unsurprisingly, different definitions with differing emphasis have evolved (Sharma & Chrisman 1999).

Guth and Ginsberg (1990) provide a definition of CE often used in entrepreneurship research: "Two types of phenomena and the processes surrounding them: (1) the birth of new business within existing organisations, i.e. internal innovation or venturing, and (2) the transformation of organisations through renewal of the key ideas on which they are built, i.e. strategic renewal" (1990, p. 5). Based on their differentiation Stopford and Baden-Fuller (1994) share the view that besides corporate venturing (organisational creation and facilitation) and corporate renewal (organisational change) a third type CE exists, which has not yet received much attention in entrepreneurship research. This type is based on the idea of the Schumpeterian entrepreneur. It includes organisations able to change the rules (frame-breaking change behaviour or frame-breaking innovation) of competition for a whole sector.

Sharma and Chrisman (1999) systematically summarise many existing definitions on CE and offer a single definition, on which this dissertation relies. They define CE as, "the process whereby an individual or a group of individuals, in association with an existing organisation, create a new organisation or instigate renewal or innovation within that organisation" (1999, p. 18). The creation or renewal can be realised through a specific entrepreneurial posture and behaviour, which must be continuously recognised and supported on all organisational levels

to ultimately perceive entrepreneurial opportunities and pursue entrepreneurial activities (Covin & Slevin, 1991). Sharma and Chrisman (1999) demonstrate that these kinds of entrepreneurial activities can arise through three different and individual types of activities: *corporate venturing*, *strategic renewal*, and *innovation* (See Figure 1-1).

Figure 1-1: Hierarchy of terminology in Corporate Entrepreneurship (1) (adapted from Sharma & Chrisman, 1999)



The thought process follows that of Guth and Ginsberg (1990) and Stopford and Baden-Fuller (1994), who see innovation as an independent activity type within the CE domain. Sharma and Chrisman (1999) find entrepreneurial actions and activities are not exclusively related to innovation, since innovation is an additional option for the other two CE activity types corporate venturing and strategic renewal.

> *Therefore, we take the position that for the purpose of defining entrepreneurship, it is preferable to treat innovation as an entrepreneurial act rather than as the only act that makes the occurrence of entrepreneurship possible.* (Sharma & Chrisman, 1999, p. 18)

The presence of innovation might be a sufficient but not a necessary condition for the existence of CE because new organisational entities within an established organisation can be created, and established organisations can be renewed without any innovation. But Sharma and Chrisman also admit that more often than not strategic renewal includes "some sort of innovation" (1999, p. 19). This is also valid for corporate venturing activities, which usually originate from innovation or lead to innovation when products are offered, or markets exploited. Consequently, a unique and clear separation of corporate venturing and strategic renewal from innovation seem to be challenging, especially from a practical point of view. In contrast,

innovation as a separate entrepreneurial activity with complex characteristics carries the greatest related risk, because generally the success rates of innovation at a market level are low (Teng, 2007).

From innovation to Open Innovation

Similarly, to the situation with the term CE, no common understanding of innovation has been developed and several definitions exist (McFadzean et al., 2005, Crossan & Apaydin, 2010). One of the oldest definitions is provided by Schumpeter (1947) who describes innovation as, "the doing of new things or the doing of things that are already being done, in a new way" (1947, p. 151). In the academic world, innovation is one of the most analysed and most multidimensional subjects of research (Fagerberg et al., 2012). Crossan and Apaydin (2010) provide a systematic review of the literature on innovation articles published since 1981. The authors' findings can be divided into two basic categories. First, the three *determinants of innovation* (leadership, managerial levers, and business processes) and second, the two *dimensions of innovation*. The latter can be further divided into innovation as process (how to manage and pave the way for innovation) and innovation as outcome (the results of innovation activities).

While the main focus of previous academic studies lies on the innovation-as-outcome dimension, that of innovation as a process is comparatively under developed (Crossan & Apaydin, 2010). Outcome variables of innovation as dependent variables (e.g. innovation performance) are often used in empirical studies (Ebersberger et al., 2012), because they are necessary and sufficient for the successful exploitation of an idea, whereas the innovation process dimension is only necessary but not sufficient for an idea exploitation (Crossan & Apaydin, 2010).

Here, the innovation outcome consists of other sub-dimensions such as form, magnitude, referent, or type. Particularly the form (e.g. business model innovation) (Chesbrough & Schwartz 2007; Chesbrough 2010) and the magnitude (e.g. radical innovation) (Christensen, 1997) of innovation outcome have attracted the attention of practitioners recently in the context of the impact and effects of digitalisation. Following Crossan and Apaydin (2010) the innovation-as-process dimension includes the management, control, and development of the process. The understanding of the innovation process itself has changed continuously (Cooper, 2014), and a variety of different structural models have been developed and established in the last decades (Cooper, 1990; Rothwell, 1994). What most have in common is that the process

usually starts with an idea generation phase and ends with the commercialisation phase (Brem, 2011).

Studies on innovation processes revolve around various sub-dimensions such as the *level of innovation process* (e.g. firm), the *direction of innovation process* (e.g. bottom-up), the *driver of the innovation process* (e.g. knowledge) and one of the most recent analysed dimensions in research: the *locus of the innovation process* (a continuum between closed and open innovation). The latter specifically describes the extent to which the process additionally or alternatively uses the wide and deep portfolio of external market knowledge and different innovation sources including customers, suppliers, research institutes, and also competitors or cross-industry partners in order to increase the overall innovation potential of the organisation (Laursen & Salter, 2006; Ebersberger & Herstad, 2011). This makes the innovation process a complex and interactive process, which is also determined and controlled by collaborative (sub)processes described in the Open Innovation (OI) literature (Berkhout et al., 2006).

The idea of OI as a multidimensional concept has prompted untold numbers of research questions widely unrelated to other dimensions of innovation. Since 2003 innovation researchers have transformed OI into an independent research stream (Huizingh, 2011; Schroll & Mild, 2012, West et al., 2014; Randhawa et al., 2016). Today it is a very popular research subject for academic publications (Dahlander & Gann, 2010) and is now widely, albeit not fully, accepted by the academic community (Trott & Hartmann, 2009).

The term and core idea of OI goes back to the work of Henry Chesbrough. The work applies six key principles to differentiate the theorem OI from the closed innovation approach (Chesbrough, 2003, p. xxvi). The theorem can be simply summarised as asserting that the best innovative ideas can come from outside of the organisation and can make a significant contribution to the existing (internal) organisational innovation activities. Gassmann and Enkel (2004) specified the theorem by additionally integrating three knowledge transfer processes between the organisation and external innovation actors. These are the *outside-in process* (the generation and integration of external knowledge), the *inside-out process* (the externalization and commercialisation of internal knowledge) and finally the *coupled process*, which is a mixture of the inside-out and outside-in processes that aims to make use of different collaborative activities with external partners to develop new innovations or to exploit existing innovation.

In contrast to CE, the term OI is surprisingly homogeneously employed in the literature. Only a few authors use synonyms such as distributed innovation (Schroll & Mild, 2012) or collaborative innovation (Baldwin & Von Hippel, 2011). Originally Chesbrough defined OI as follows:

> *Open Innovation means that valuable ideas can come from inside or outside the company and can go to market from inside or outside the company as well. This approach places external ideas and external paths to market on the same level of importance as that reserved for internal ideas and paths* (2003, p. 43).

In 2014, Chesbrough bolstered his definition by referencing the organisation's business model: "[…] a distributed innovation process based on purposively managed knowledge flows across organisational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organisation's business model […]" (Chesbrough & Bogers, 2014, p. 1). Comparing the definitions of CE and OI they obviously overlap in terms of innovation but also because of their strong processual creation and development perspective. The following section investigates the existing links between the CE and innovation.

The link between Corporate Entrepreneurship and innovation

As section 1.1 demonstrated, CE research treats the creation of corporate innovation as a specific function of the behaviour and activity of entrepreneurial organisations. The innovation literature presents another somewhat contrary position, namely that entrepreneurship can essentially be a stimulating factor for innovation (Brem, 2011).

The literature review by Crossan and Apaydin (2010) emphasises that 10 percent of 13,000 papers that use the term *entrepreneur* are also linked to the keyword *innovation*. Brem (2011) refers to this as a chicken-and-egg problem and concludes that this relationship had not been fully clarified at the time. These two different perspectives are a result of different research and literature streams and differing levels of analysis (McFadzean et al., 2005; Landström et al., 2015). While entrepreneurship studies originally started with the individual level of research (bottom-up), authors of innovation studies prefer a more aggregated level as a starting point for research (top-down) (Crossan & Apaydin, 2010). Landström et al. (2015) accurately underline today's differences and similarities between these two literature streams as follows:

> *Despite common roots in Schumpeter and some interrelated works, the two fields seem to have drifted apart over the last decades. However, there seems to be some elements of*

> *overlaps, for example, in the interest in the evolutionary approaches and in geographic differences in innovation and entrepreneurship, but also in an interest in topics such as innovation management (corporate entrepreneurship) and in technology-based ventures* (Landström et al., 2015, p. 494).

There is consensus that CE and innovation are somehow connected with each other (Sharma & Chrisman, 1999; Landström et al., 2015). Crossan and Apaydin perceive the similarity to be based on the organisational process and compactly summarise: "Entrepreneurship and innovation are intrinsically related as both involve the processes of discovery, evaluation, and exploitation of opportunities (entrepreneurship) and novelties (innovation)" (2010, p. 1177).

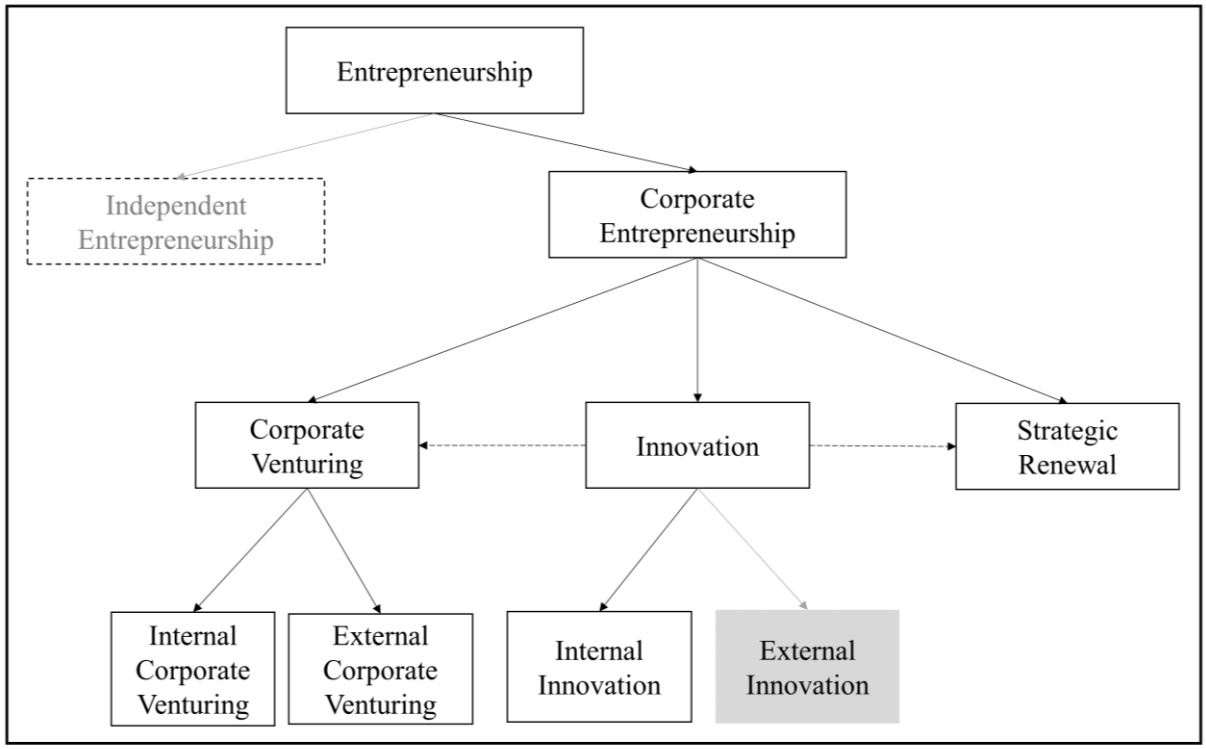
Researchers from the CE stream such as Rutherford and Holt (2007) or Ireland et al. (2006a; 2006b) have a similar understanding but also include the level of individuals. They essentially understand CE as the process which enables individual employees (corporate entrepreneurs or intrapreneurs) within the established organisation to pursue opportunities and innovate. Consequently, they see CE and innovation as inseparable.

But referring the characteristics of market orientation and social interaction against the hierarchy of CE terminology (Sharma & Chrisman, 1999) it becomes clear that the original understanding of innovation was of something that happened exclusively within the firm. Guth and Ginsberg (1990) and Covin and Slevin (1991) label it "internal innovation" which can be perfectly compared with the remarks on the closed innovation theorem from Chesbrough (2003). This view still stands in contrast to the established understanding of corporate venturing activities that already recognise the importance of an external and collaborative orientation. This is also why Sharma and Chrisman (1999) differentiate internal and external corporate venturing.

Internal corporate venturing concentrates on activities creating new business entities inside the organisation, whereas external corporate venturing pursues the goal of creating semi-autonomous or autonomous entities outside of the organisation with a stronger market orientation. Such activities include collaboration vehicles such as joint ventures with external partners or corporate venture capital initiatives to manage external collaborations. The studies of Espinosa and Suanes (2011) and Teng (2007) underline the important role of managing external collaboration activities within the CE context. They conclude that the implementation of joint ventures with external partners can be a useful instrument for all of the three CE activity types (innovation included) even though their individual results can vary.

Based on these findings from the CE literature and on the OI research stream, this dissertation acts on the assumption that innovation activities must also be differentiated into internal and external innovation activities (See Figure 1-2). This assumption is derived from the work of Sharma and Chrisman (1999) illustrating that innovation activities can potentially support internal and external corporate venturing activities.

Figure 1-2: Hierarchy of terminology in Corporate Entrepreneurship (2) (adapted from Sharma & Chrisman, 1999)



Managing innovation-oriented partnerships in large corporate firms

CE and OI are subject to a strong processual orientation. Both domains focus on creating innovation within a corporate environment by leveraging internal resources with external ones. However, organisations seeking to benefit from the knowledge or technologies of external partners face additional challenges to their innovation management because of their strongly established internal orientation. Consequently, such organisations must find ways to manage these collaborative relationships and activities within or alongside the existing processes. To ensure a consistent wording the term *innovation-oriented partnerships* is only used in this dissertation.

Innovation-oriented partnerships are often the subject of research projects in the fields of interfirm relationships (Kale & Singh, 2009), alliances (Wassmer, 2010), and OI (Dahlander &

Gann, 2010; Randhawa et al., 2016). Terms such as partnerships, dyadic alliances, strategic alliances, cooperation, and collaboration are often used interchangeably and consistent definitions are rare (Forrest & Martin, 1992). Many authors share the opinion that the sum of partnership literature must be seen as an independent and separate research stream, because it covers an interdisciplinary, heterogeneous, and complex phenomenon (Spekman et al., 1998). This is a result of the natural multidimensional characteristics of partnerships in terms of different configurations and perspectives, which must be carefully considered in every research analysis.

To have a clear and distinct understanding of partnerships this dissertation follows the definition of Tether, who defines innovation-oriented partnerships as "[…] active participation in joint R&D and other technological innovation projects with other organisations. It does not necessarily imply that both partners derive immediate commercial benefits from the venture. Pure contracting out work, where there is no active participation is not regarded as co-operation" (2002, p. 949). Consequently, the most important criteria to evaluate an innovation-oriented partnership is an active and collaborative development of an innovation project. Extracting a short-term economic benefit from such a collaboration is not a must.

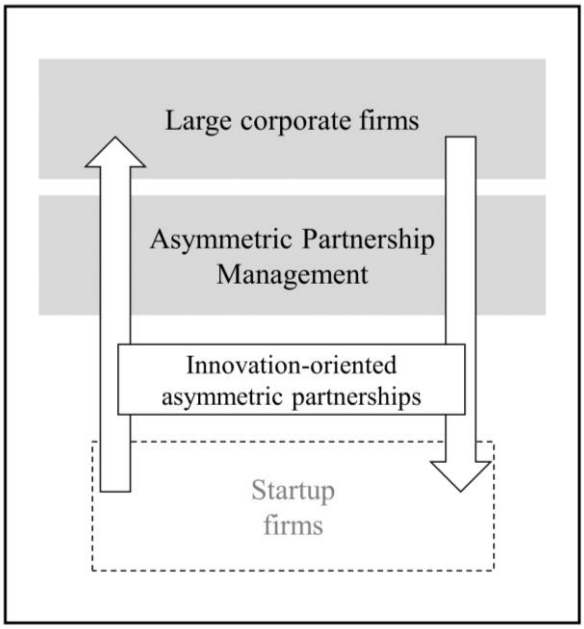
The reasons why organisations decide to enter innovation-oriented partnerships at all are multifaceted and complex (Tether, 2002). The reasons are triggered from the operative level or from the strategic level of an organisation. Following Tether, the main reason is essentially that firms do not possess "internally all of the necessary resources (including knowledge) and/or because they wish to reduce the risks associated with innovation (including the risk of technological spillovers)" (2002, p. 950f). Based on this fact several other reasons can be derived such as, reducing developing costs, decreasing time to market, having access to talent and promising technologies, or enlarging networks (Wassmer, 2010).

Furthermore, this dissertation adopts a perspective in line with an exclusive bilateral and non-equity relationship understanding between two different and independent organisations (dyadic partnership and bottom-up, respectively) and not a multi partner or network perspective (portfolio partnership and top-down, respectively) which is often the case in studies with an exclusive sample of large firms (Wassmer, 2010; Wang & Rajagopalan, 2015). Taking this perspective is necessary to identify, analyse, and evaluate the behaviour and activities of large corporate firms referring to their specific interactions with innovation partners such as startup entrepreneurs.

Managing asymmetric partnerships in large corporate firms

In the last three decades, researchers have started to specifically analyse innovation-oriented partnerships between unequal innovation partners. Some of these authors label these relationships asymmetric partnership (Minshall et al., 2010; Hogenhuis et al., 2017), asymmetric collaboration (Blomqvist et al., 2005; Hogenhuis et al., 2016), asymmetric cooperation (Jang et al., 2017), asymmetric alliance (Pérez et al., 2012), or asymmetric new product development alliances (Kalaignanam et al., 2007). Although a specific definition is missing, asymmetric partnerships essentially describe any relationships with unequal actors such as large corporate firms and startups (Alvarez & Barney, 2001), venture capital firms and startups (Cable & Shane, 1997; Shepherd & Zacharakis, 2001), or university parents and university spin-offs (Soetanto & van Geenhuizen, 2015). This dissertation focuses exclusively on large firms and their ability to interact and collaborate with startups and their entrepreneurs (See Figure 1-3).

Figure 1-3: Large firms' Asymmetric Partnership Management



Generally, the asymmetry results from the natural imbalance in terms of organisational size, market power (Kelly et al., 2000), or know-how (Kalaignanam et al., 2007). Furthermore, these partnerships can be characterised by asymmetric trust (Blomqvist et al., 2005; Wang et al., 2015) or even the asymmetric outcome distribution on a specific collaborative project (Gulati, 1998).

A large number of studies[1] focus on *motives, reasons, obstacles, and performance drivers* to ultimately give practical advice for the actors involved. Forrest and Martin (1992) focus on the interplay between small biotechnology companies and large pharmaceutical organisations in strategic partnerships and the underlying success factors. The authors show that small companies primarily enter university agreements and client sponsored R&D partnerships, in contrast to large firms that often enter agreements based on technology licensing. The reasons for entering strategic partnerships and the factors driving successful and unsuccessful alliances are ranked differently by small and large firms. Niederkofler (1991) reports six case studies of dyadic partnerships between larger and smaller firms. The paper deals with the main factors (strategic fit and operating fit) to determine the evolution of partnerships. The article summarises the key problems (e.g. hidden agendas or time restricted negotiation processes) and key success factors (e.g. well-connected managers or trust and goodwill creation).

Alvarez and Barney (2001) report on a sample of 128 partnerships and emphasising the asymmetric phenomenon, offer a compact overview featuring advice on how both parties can benefit from these kinds of partnerships (e.g. for large firms: choose partners able to generate several technology streams). Minshall et al. (2010) focus on different management challenges by taking four different perspectives of often involved stakeholders (startups, large firms, investors, and lawyers). They also provide five different approaches to meet the challenges: strategy and business model, the technology, the organisation, making the deal, and managing the deal.

Hogenhuis et al. (2016) and Hogenhuis et al. (2017) analyse 20 collaborative innovation projects and conduct interviews with innovation managers of five large firms and CEOs of four young ventures. The former paper identifies five key capabilities desired by large firms: creativity, technology know-how, problem-solving skills, project management skills, and manufacturing capabilities. Moreover, the article goes on to develop and present a collaborative project decision-making model for large firms to support their managers. The latter study identifies and analyses problems that occur before and during asymmetric partnerships. Moreover, the authors recommend solutions that can be used to address these problems at an early stage.

[1] Based on the entrepreneurship, innovation, and management literature, Appendix 1-1 offers a short summary of selected empirical asymmetric partnership studies, which reflect the development and status quo of Asymmetric Partnership Management research.

Using case studies and interviews, Hora et al. (2018) focus on the as yet unexplored phenomenon of coopetition. The authors analysis the causes and effects of coopetition relationships between 35 matched pairs of large firms and startups. The study asks startup entrepreneurs and CEOs or innovation managers about their motives for entering partnerships and their partner management activities like the partner selection process. In addition, it presents implications in terms of benefits and risks of coopetition.

Other studies set their exclusive research focus on *collaborative instruments and implementation models* such as startup programmes/platforms, which are mainly introduced by large multinational corporations that organise their activities through their own independent legal entities. Based on a broad mixture of managers of corporate firms and startups, Weiblen and Chesbrough (2015) develop four different corporate engagement models (Corporate Venturing, Corporate Incubation, the Startup Programme - Outside-In, and the Startup Programme Platform) to interact with startups. They suggest these "newer models" seem to be a more suitable innovation vehicle than equity-related models such as joint ventures or a corporate venture capital (CVC) model. The same study analyses the main goals, characteristics, and challenges of the individual models.

Jang et al. (2017) conducted a large survey of Korean manufacturing firms to explore the complementary potential of asymmetric partnerships between large firms and SMEs. The resulting article offers four different OI collaboration types (bilateral, one-way, outsourcing, and integrated). Schildt et al. (2005) examine the antecedents of explorative and exploitative (interorganisational) learning using a dataset of 110 large firms and 5,091 cited patents of their external venture partners. The results are organised according to four different governance modes from external corporate venturing: alliance, joint venture, acquisitions, and CVC. The findings include that the less integrated the venture governance mode (such as non-equity venturing partnerships), the more explorative the learning.

Kalaignanam et al. (2007) specifically focus on the outcome of asymmetric partnerships in terms of new product development. The study investigates whether asymmetric partnerships are win-win or win-lose partnerships. Based on a data set that includes 167 dyadic partnerships, the study finds that asymmetric partnerships are value-adding partnerships for both partner firms. Howard et al. (2016) focus on relationships between one large corporate firm and 55 of their small partner firms. The results show that collaboration among employees of the partner firms increased after having a highly social interaction with the large corporate firm. The

authors conclude that young companies can learn collaboration techniques from the larger firm to enhance their own collaborative innovation abilities.

Another topic often presented in partnership and collaborative innovation research as a key success factor for partnerships is *interorganisational trust* (Shah & Swaminathan, 2008). The research studies of Blomqvist et al. (2005) and Wang et al. (2015) focus on trust in asymmetric partnerships. Blomqvist et al. (2005) analyse a partnership in terms of the balancing role of trust and contracts. They see both as complementary tools and not as alternatives. They value contracts as a chance to generate trust and a mutual understanding supporting the collaboration. Wang et al. (2015) build their research design on the phenomenon of asymmetric trust and show how trust develops and changes during partnership development between large firms and smaller firms. Therefore, the study analyses the perception of trust asymmetry to develop a collaborative relationship for both partners on a micro-level. The authors conclude that "imbalance of trust is the norm" (2015, p. 945).

The findings of the reviewed studies illustrate that partnerships between large corporate firms and startup firms and especially its management are characterised by different forms of dependence and complexity. Although the partnership performance dimension is not the focus of this dissertation, it is worth mentioning that researchers arrive at very different conclusions on who among the actors benefits most (Doz, 1987; Alvarez & Barney, 2001; Stuart, 2000; Baum et al., 2000; Katila et al., 2008). Partnerships are also highly dependent on the individual characteristics, collaboration behaviour, and ability of both parties involved, which is illustrated in the next chapter.

Independent startups and startup entrepreneurs as corporate innovation partners

Ireland et al. state that an "effective alliance management begins with selecting the right partner" (2002, p. 413). Du et al. (2014) provided the first evidence that collaboration with different types of partners has to be managed in different ways. This is also because different collaborative activities and collaboration importance (Fritsch & Lukas, 2001; de Faria et al., 2010) go with different partners. Recent innovation studies report that it is necessary to extend the list of partners to encompass public crowd sourcing, entrepreneurs, and technology-related startups (Bahemia & Squire, 2010; Laursen & Salter, 2014; Spender et al., 2017; Usman & Vanhaverbeke, 2017).

Most asymmetric partnership studies do not provide any precise definitions of large corporations and startups (Das & He, 2006). But this careful differentiation between individual innovation partners is important because within a partnership portfolio the diversity of partners affects innovative performance and productivity (de Leeuw et al., 2014). Collaborative innovation projects often also depend on single innovation partners in terms of their contribution to new product performance (Bahemia & Squire, 2010), financial performance (Du et al., 2014), or general innovation performance effects (Bengtsson et al., 2015).

Organisational life cycle theory holds that many organisations pass through between three and ten different stages during their development. Smith et al. (1985) focus on three stages and differentiate between the stages, inception (young and small firms), high-growth (larger and older firms) and maturity (largest and oldest). Lester et al. (2003), provide a five-stage model (Existence, Survival, Success, Renewal, and Decline) and do not exclusively link organisations to these stages. They share the opinion that every organisation whether small or large passes through these or similar stages. Organisations in the existence or entrepreneurial phase are usually less than 10 years old. Medium-sized firms are in the survival stage and are characterised by at least 15% growth. Greiner (1972) places the meaning of growth in an organisational development model, and describes five phases categorised under growth (evolution) or crisis (revolution). Moreover, Greiner underlines that every organisation can essentially be characterised by two criteria: size (continuum from small to large in terms of employees or sales volume) and age (continuum from young to mature) (Greiner, 1972).

Detailed analysis of startups features different specifications in research and practice, making a precise comparison challenging. As mentioned above, some studies primarily link startups to one specific phase of their organisational life cycle. Other studies characterise startups with a constantly high growth rate with a more or less indefinite end. Other studies emphasise their degree of innovation, degree of problem solving, degree of technology orientation, or degree of customer satisfaction as a key startup characteristic (Blank, 2013), while others still describe “real startups” as firms that primarily focus on the disruption of traditional businesses (Christensen, 1997).

Because validated information on growth rates is difficult to access, many researches focus on a mixture of different qualitative information based on startup characteristics, an approach which is followed in this dissertation. Consequently, the definition provided by Das and He (2006), which defines startups as “generally young, small and highly innovative firms in

industries with rapidly developing technologies" is used. In contrast to other studies analysing startups with fewer than 150 employees or a sales average of $25 million (Alvarez & Barney, 2001) this dissertation follows the understanding that a startup is the smallest and youngest organisational entity possible (Smith et al., 1985).

Referring to the definition of an entrepreneur by Bygrave and Hofer (1992) a startup organisation can also be seen as the sum of the founding team of entrepreneurs. Startups can exist in various forms such as independent ventures (Shrader & Simon, 1997), corporate startups (Becker & Gassmann, 2006), and university spin-offs (Rasmussen et al., 2010). This dissertation takes the view that startups are external and independent ventures led by independent entrepreneurs which do not directly originate in any corporate firm environment.

In contrast, it is referred to the Institut für Mittelstandsforschung (IfM) Bonn, which implicitly defines large corporate firms as entities with more than 500 employees and a minimum of 50 million euros of annual sales. Because existing asymmetric partnership studies do not provide clear definitions of either actor, a high number of partnership studies focus primarily on the fundamental differences between startups and large corporations. These differences are enormous (Weiblen & Chesbrough, 2015) and become directly visible through applying criteria such as R&D operations (Narula, 2004), knowledge management practices (Väyrynen et al., 2017), partner selection choice (Antolin-Lopez et al., 2015), commercialisation strategies (Gans & Stern, 2003), or innovation activities (Criscuolo et al., 2012).

Nevertheless, differences are not only evident on the organisational level but also on the individual level. Startup entrepreneurs have different forms of entrepreneurial (Gundolf et al., 2017) and achievement motivation (Stewart & Roth, 2007), information-seeking behaviour (Kaish & Gilad, 1991), decision-making behaviour (Smith et al., 1988; Busenitz & Barney, 1997), risk taking profiles (Stewart & Roth, 2001), or a generally different understanding of why and how to start and run their business than managers of large firms.

Working with asymmetries increases the complexity for both partners. So why then should these actors be willing to enter such partnerships at all? Essentially, both partners have good reasons to interact and collaborate. Large corporate firms are always looking for competitive advantage, learning opportunities, specific resources, or strategic business potential. Therefore, they hope to get access to technologies (Narula, 2004), talented people and effective teams, possibly new customer segments or simply inspiration in terms of efficient processes, new methods, or an innovation-friendly corporate culture. Moreover, large firms have realised that

they are not able to react as adequately as small firms can to fast technological trends and new customer needs. Their structures and processes are less flexible, which ultimately force them to engage proactively with and learn from the startup community (Weiblen & Chesbrough, 2015). They are willing to engage and collaborate with startups in traditional but also in new ways and activities in the hope that collaboration has the power to positively affect the performance of both firms (Spender et al., 2017) and create win-win situations (Usman & Vanhaverbeke, 2017).

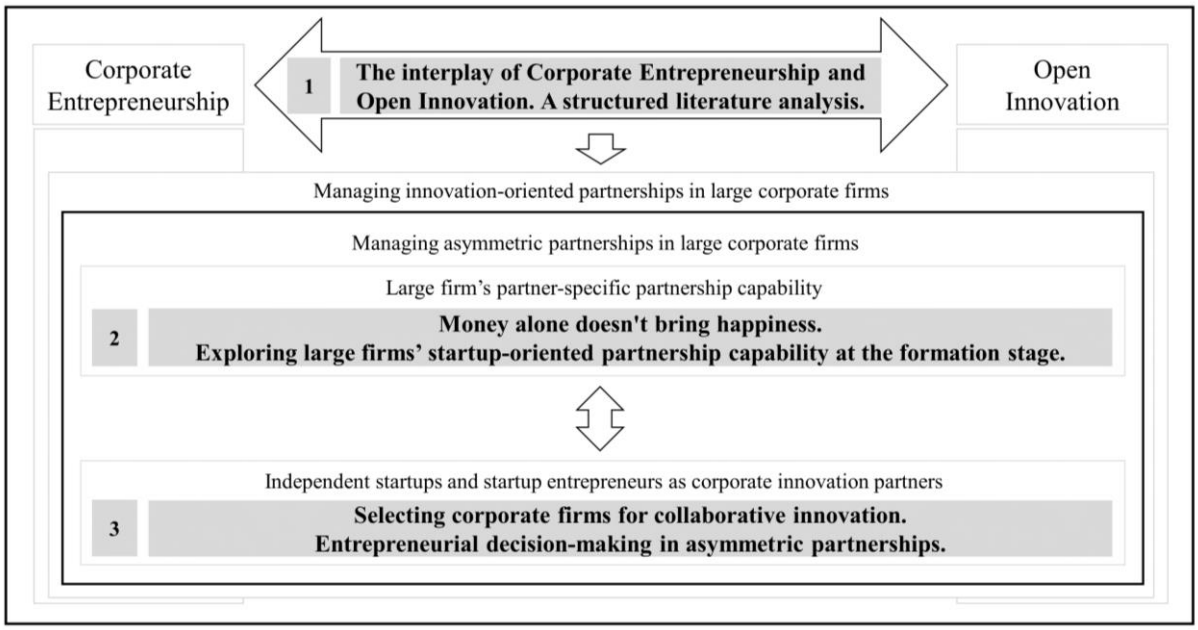
Partnerships with large firms offer startup entrepreneurs an opportunity to overcome the liability of newness and smallness (Usman & Vanhaverbeke, 2017) and enhance their learning capabilities (Baum et al., 2000). Commercially-oriented startup entrepreneurs seek a solid growth lever, which might be a first customer or access to a broad customer base to generate stable revenue streams (Hora et al., 2018) and having business success. Kelly et al. (2000) provide several other reasons why startups might enter partnerships with large firms. They give an overview of seven different activities such as financing, new product development, manufacturing, marketing/distribution, legal, customer support/services and reputation that can generally offer complementary benefits for startups.

Although the above-mentioned reasons seem to be comprehensible, partnerships between large firms and startup entrepreneurs are not a sure-fire success and must always result from balanced, mutual decisions. The fact that both partners are so different means making relationships work can be challenging and research on a well-thought-out form of *Asymmetric Partnership Management* is still a neglected and under-researched discipline, as the next chapter shows.

1.2 Research gap and purpose of dissertation

The preceding chapters gave a compact overview on the meaning of innovation-oriented partnerships and their connections to the field of CE, OI, and Asymmetric Partnership Management. Large companies increasingly look for co-creation projects with new ventures to accelerate their innovation process, and researchers also stress the potential of non-equity-related and non-bureaucratic partnerships to develop mutual innovations (Weiblen & Chesbrough, 2015). Consequently, the purpose of this dissertation is to contribute to the research domains of CE and OI by investigating the characteristics of Asymmetric Partnership Management from a large corporate firm perspective under consideration of the specific needs of startups and their entrepreneurs. The dissertation encompasses three papers (See Figure 1-4) seeking to address the research gaps described in the following sections.

Figure 1-4: Overview - Towards Asymmetric Partnership Management against the background of Corporate Entrepreneurship and Open Innovation literature



Study 1 - The Interplay of Corporate Entrepreneurship and Open Innovation. A structured literature analysis

The literature of CE and OI lack references to each other, although many authors assume a high degree of overlap exists. Landström et al. (2015) and Landström and Harirchi (2018) even treat the terms CE and innovation management as synonyms and emphasise the close connections. Phan et al. (2009) sees potential for future research especially in terms of radical innovation.

The specific relationship of CE and external innovation (namely OI) has been highlighted previously. Kuratko (2017) lists nine emerging topics which could warrant further investigation. The work highlights how activities related to external corporate venturing are an important way for established organisations to obtain future access to innovation. External corporate venturing has not always been recognised as an important strategic instrument within the CE domain.

Burgelman (1984) presents a matrix for organisational design activities for CE, and also illustrates that the more closely the individual organisational designs relate to the "structural core business" of an organisation the greater is its strategic relevance for the organisation. Corporate venturing activities such as spin-offs or nurturing/contracting with internal entrepreneurs (also called "friendly competitors") are designated unimportant organisational design activities. These examples show the deep-seated and traditional understanding of CE in

terms of structures and activities considered to be “inside-out” oriented. The same is true for external innovation, which makes the combination of external collaboration and external innovation an interesting and necessary field of research.

In summary, the findings demonstrate the importance of a stronger external orientation within the CE domain, which prominently underlines the change in perspective from internal to external innovation, which converge towards the OI paradigm. In the last couple of years, OI researchers have also illustrated the necessary convergence between OI and CE (Bogers et al., 2017; van de Vrande et al., 2010).

The presented discussions hint that only a few connections between the emerging research streams CE and OI have been made so far. However, a systematic literature review to clearly demonstrate the overlapping fields and topics of both domains remains absent. Chapter 2 in this dissertation fills this gap by providing a systematic literature review on the interplay between CE and OI. The research question of this first study can be summarised as follows:

What is the interplay between corporate entrepreneurship and open innovation literature?

Study 2 - Money alone doesn't bring happiness – Exploring large firms’ startup-oriented partnership capability at the formation stage

The discipline of partnership management is an under investigated phenomenon (Spekman et al., 1998; Ireland et al., 2002) that includes all main tasks and sub-activities relating to the partnership life cycle, such as forming, developing, operating, and/or maintaining a partnership. Failure rates of 50–60% among strategic partnerships are commonplace (Duysters et al., 1999), and most such failures are because of bad preparation and poor execution in all stages of partner management-related activities (Niederkofler 1991; De Meyer, 1999, Holmberg & Cummings, 2009). Niederkofler theorises that “[the] major cause for cooperative failure is managerial, and therefore controllable and potentially avoidable” (1991, p. 237).

Slowinski and Sagal (2010) emphasise the importance of preparing for partnerships, because well-thought-out management can help to improve partnership success, and therefore the innovation success. Consequently, effective partnership management is a decisive and very challenging business activity because innovating in tandem with others goes along with a high degree of complexity, higher transaction costs, and a greater probability of interest conflicts based on opportunistic behaviour and differences of understanding, and constantly changing

roles and positions of individual managers throughout the evolution of a partnership (Hoffmann, 2005).

One emerging activity is that of creating a partnership between a large corporate firm and a startup. Whereas the motive of both partners (the *why*) has been researched (Forrest & Martin, 1992; Hogenhuis et al., 2016), less is known about large corporate firms' ability to develop their partnership capability related to startups and their effort to manage these types of partnerships effectively (the *how*).

In research and practice, asymmetric partnerships have often been discussed in isolation as a promising innovation instrument, especially for large corporations. However, for many startups the results of a partnership could have a positive (Stuart, 2000) or a very negative and destructive effect (Doz, 1987; Alvarez & Barney, 2001; Katila et al., 2008). There is always risk involved in an asymmetric partnership because large firms may behave opportunistically, absorb key knowledge, commission reverse engineering, steal technology, or simply reject requests driven by *not-invented-here* syndrome. Such behaviour could threaten the existence of startup firms and are the reason why previous studies of asymmetric partnerships have primarily focused on challenges rather than opportunities (Pérez et al., 2012); as is evident in the titles of work by Diestre and Rajagopalan (2012) (*Are all Sharks Dangerous*?), Katila et al. (2008) (*Swimming with Sharks*), and Hora et al. (2018) (*David and Goliath*).

Alvarez and Barney (2001) describe this relationship as a *learning race* where the large counterpart tries to quickly learn about the other partner's expertise, network, or technology and the startup consciously and proactively slows down the learning process during the partnership development. Referring to this paradoxical situation the term of "coeptition" (collaboration between competitors) in the context of asymmetric partnerships has been established recently (Brandenburger & Nalebuff, 1996; Hora et al., 2018).

The empirical study of Forrest and Martin (1992) shows that startups and large firms both agree on the top two reasons for successful partnerships, which are agreement over strategic objectives and the open communication between both parties. The surveyed startups mention that the top reasons for unsuccessful partnerships are the low level of attention to detail by the larger opponent and the different understanding of the strategic goals. In contrast, large firms see the main reasons for failure as the incompatibility of the other partner and the lack of trust. These aspects show why making partnerships work is difficult. Consequently, the partners must find how to overcome or at least reduce these barriers. Several researchers are critical of the

efforts of large firms to overcome these challenges, accusing the large firms of having no clear action plan (Hogenhuis et al., 2016) or not understanding how startups operate in detail (Minshall et al., 2010). Furthermore, large corporate firms have no holistic understanding of the natural limitations of startups, and thus, of the partnership (Hogenhuis et al., 2017).

Prior studies have also failed to include the challenges faced by asymmetric partnerships at the individual stages of the innovation process (Hogenhuis et al., 2016) and to give detailed information on related micro-processes and activities (Kohtamäki et al., 2018). To bridge this gap, this study theorises that increasing market pressure has made large corporate firms more willing to learn how to proactively and effectively pave the way for startup partnerships (Weiblen & Chesbrough, 2015). Becoming an innovation partner of choice in the market might be an important strategic advantage in the future. Consequently, this study aims to answer the following research question:

How do large corporate firms develop a startup-oriented partnership capability at the formation stage?

Study 3 - Selecting corporate firms for collaborative innovation. Entrepreneurial decision making in asymmetric partnerships

Asking and researching what large firms want and do is only one side of the coin. Many innovation studies focusing on actor interaction with startups in OI processes presume that, as decision makers, startup entrepreneurs are generally very interested in collaborating with other partners; but the literature review of Spender et al. (2017) concludes that such studies rarely examine the entrepreneurial perspective.

When large firms are interested in working with startups and go on to initiate partnerships their managers are always dependent on the entrepreneurs behind the startups being willing to collaborate and that brings into focus startup founders' decision-making behaviour.

Entrepreneurs are a heterogenic group (Fauchart & Gruber, 2011) and besides differing in terms of their demographic characteristics the individuals differ in terms of their motivation (Vijaya & Kamalanabhan, 1998), entrepreneurial passion (Cardon et al., 2013), perception of success (Fisher et al., 2014), perceptions of the causes of failure (Mandl et al., 2016), attitudes to risk (Block et al., 2015), interpersonal networking styles (Vissa, 2012), attitude to growth (Wiklund

et al., 2003), entrepreneurial self-efficacy (McGee et al., 2009), negotiation behaviour (Artinger et al., 2015), and decision-making behaviour (Sarasvathy, 2001).

Existing studies on entrepreneurial decision making capture some but comparatively few entrepreneurs' decisions related to the wide range of possible entrepreneurial activities (Shepherd et al., 2015). There are studies on the decision to start a business (Dew et al., 2009), the decision to exploit a business (Delmar & Shane, 2003) or the decision to exit a business (Wennberg et al., 2010). But studies on the collaborative behaviour of entrepreneurs, which includes entrepreneurial decision making in the context of partnerships, and especially asymmetric partnerships, are lacking (Shepherd et al., 2015) with one exception (Zander, 2007). As illustrated in previous chapters there are many reasons why entrepreneurs may evaluate and perceive a partnership with a large firm as a unique chance for future success and ultimately make a partnering decision with a large firm.

But other entrepreneurs might also have a wide range of good reasons why they are not willing to enter these asymmetric partnerships. Such reasons include the fear of intellectual property theft (Alvarez & Barney, 2001) or of losing control through a takeover (Doz, 1987; Niederkofler, 1991) and the consequent loss of independence. The study of Vandaie and Zaheer (2014) leaves this trade-off unexplored and suggests future research examine why this tension exists.

The research findings on asymmetric partnerships clearly do not adopt an appropriate entrepreneurial perspective and ignore the individual needs and specific characteristics of startup entrepreneurs. Specifically, studies neglect to analyse when entrepreneurs are willing to collaborate with large firms in the formation stage. In the same vein, the literature review of Das and He (2006) notes that most studies do not specify the involved partner's characteristics such as organisational size at all. The study concludes that little is known about the entrepreneurial partner selection procedure, including underlying partner selection criteria and the decision of entrepreneurs to select their collaboration partners. For example, Blomqvist et al. (2005) and Wang et al. (2015) emphasise the important and sensitive role of unbalanced or asymmetric trustworthiness and trust especially in the beginning of partnerships between actors with different strengths of power. Accordingly, the third study is guided by the following research question:

When are independent startup entrepreneurs willing to enter asymmetric partnerships with large corporate firms?

1.3 Structure and findings of this dissertation

The prior sections have emphasised the existing research gaps and the purpose of this dissertation derived from the presented theory. This forms the main part of the introduction. The presented studies are consequently structured into three main parts and chapters (See Figure 1-4) and embedded into the introduction (Chapter 1) and the discussion (Chapter 5).

The first main part includes the first study (Chapter 2), *The interplay of Corporate Entrepreneurship and Open Innovation. A structured literature analysis*[2]. The second and the third part include two empirical studies on the management of asymmetric partnerships. Study 2 (Chapter 3), *Money alone doesn't bring happiness – Exploring large firms' startup-oriented partnership capability at the formation stage*[3] takes the exclusive perspective of large corporate firms, while the third study (Chapter 4), *Selecting corporate firms for collaborative innovation. Entrepreneurial decision making in asymmetric partnerships*[4] focuses on the perspective of startup entrepreneurs. Using this empirical based, two-sided, and integrated approach illuminates a far more holistic picture of Asymmetric Partnership Management and ultimately increases the explanatory power of asymmetric partnership research by not focusing only on findings from one perspective.

The first study offers the basic theoretical foundation for the following empirical studies. Using the methodology of a structured literature review and 16 different search terms, the theoretical interplay between CE and OI literature is revealed. The review takes 50 out of 283 papers and subjects them to systematic analysis. The analysis leads to the identification of six main analytic categories: *Frameworks, Diagnostic and Measurement Models, Organisational and Innovation Performance, Forms of Activity and Instruments, the Individual Level,* and *Knowledge Generation and Organisational Learning*. Furthermore, existing links and interfaces between both disciplines are highlighted and an overview of future research potential is provided.

[2] A German version of this study was published in a double-blind peer-reviewed journal Zeitschrift für KMU und Entrepreneurship (ZfKE). The study was written with co-author Dr. Andreas Kuckertz (See Allmendinger & Kuckertz, 2016).
[3] This revised article is currently under consideration at the double-blind peer-reviewed journal Technovation. Earlier versions have been accepted for presentation at ACERE Conference 2016 in Gold Coast, Australia and at the ISPIM Innovation Conference 2016 in Porto, Portugal.
[4] Accepted for publication by double-blind peer-reviewed International Journal of Innovation Management (IJIM). Moreover, earlier versions have been presented at ICE/IEEE International Technology Management Conference 2018 in Stuttgart, Germany and at AoM Meeting 2018 in Chicago, USA. The study was written with co-author Dr. Elisabeth Berger.

The second study follows on from the first study and is based on a theory-elaboration approach and case study methodology. The study's goal is to explore large firms' startup-oriented partnership capability which enables firms to manage partnerships effectively and is based on the four-dimensional partnership capability construct. The research is based on the data from 17 selected case studies from among large German and Swiss firms with more than 1,000 employees. Leading executives from (open) innovation management and business development departments were surveyed in personal expert interviews to ultimately identify and analyse 15 elements of learning mechanisms.

The third study focuses on the entrepreneurial counterpart of large firms in asymmetric partnerships. The aim of this study was to find whether and when startup entrepreneurs are willing to engage in asymmetric partnerships (non-equity-related co-creation projects) with large companies under consideration of their characteristics especially the entrepreneurial self-efficacy and their perceived partners' trustworthiness. Based on a conjoint experiment partner decisions from 115 startup entrepreneurs were collected. The results suggest that a high level of openness of the large firm and concise contractual design as opposed to a very detailed design have a positive impact on entrepreneurs' willingness to partner.

The discussion (Chapter 5) include a short summary of the key findings and emphasise the contribution for theory and practice. Finally, there follows a brief assessment of further future research opportunities in the CE and OI literature with respect to Asymmetric Partnership Management.

Appendix

Appendix 1-1: Overview of selected studies on Asymmetric Partnership Management of large corporate firms

Authors	Title	Journal	Research focus
Niederkofler (1991)	The evolution of strategic alliances: Opportunities for managerial influence	Journal of Business Venturing	Collaboration problems and success factors in partnerships
Forrest & Martin (1992)	Strategic alliances between large and small research intensive organisations: experiences in the biotechnology industry	R&D Management	Collaboration success factors in partnerships
Alvarez & Barney (2001)	How entrepreneurial firms can benefit from alliances with large partners	The Academy of Management Executive / Perspectives	Conditions of value creation in partnerships
Schildt et al. (2005)	Explorative and exploitative learning from external corporate ventures	Entrepreneurship, Theory and Practice	Antecedents of explorative and exploitative learning
Blomqvist et al. (2005)	Playing the collaboration game right—balancing trust and contracting	Technovation	Roles of trust and contracts in partnerships
Kalaignanam et al. (2007)	Asymmetric new product development alliances: Win-win or win-lose partnerships?	Management Science	Value contribution for partners
Minshall et al. (2010)	Making “asymmetric” partnerships work	Research Technology Management	Challenges and solutions of partnership management
Wang et al. (2015)	The development of asymmetric trust in cooperation between large firms and SMEs: insights from China	Group Decision and Negotiation	Asymmetric trust development
Weiblen & Chesbrough (2015)	Engaging with startups to enhance corporate innovation	California Management Review	Corporate engagement models
Hogenhuis et al. (2016)	When Should Large Firms Collaborate with Young Ventures? Understanding young firms’ strengths can help firms make the right decisions around asymmetric collaborations.	Research–Technology Management	Decision-making model for corporate managers
Howard et al. (2016)	Learning to collaborate through collaboration: How allying with expert firms influences collaborative innovation within novice firms	Strategic Management Journal	Organisational learning through intraorganisational collaborative routines
Hogenhuis et al. (2017)	Unlocking the Innovation Potential in Large Firms Through Timely and Meaningful Interactions with Young Ventures	International Journal of Innovation Management	Collaboration problems that occur before and during a partnership
Jang et al. (2017)	Development of an open innovation model for R&D collaboration between large firms and small-medium enterprises (SMEs) in manufacturing industries	International Journal of Innovation Management	Open innovation models for complementary cooperation
Hora et al. (2018)	David and Goliath: causes and effects of coopetition between startups and corporates	Review of Managerial Science	Motives, management, and implications of coopetitive relationships

2 The interplay of Corporate Entrepreneurship and Open Innovation. A structured literature analysis.[5]

Abstract

Open Innovation has been predominantly treated as a standalone innovation approach so far. Its basis, however, is strongly related to Corporate Entrepreneurship. By means of a structured literature review we demonstrate how both concepts overlap and stimulate each other. The results open up avenues for further research on existing frameworks, measures, specific entrepreneurial activities, and their contribution to innovation performance as an important part of overall organisational performance.

2.1 Introduction

Organisations are increasingly faced with rising environmental dynamics and a more complex and competitive market environment. Fundamental macro-economic drivers in this are the level of technological progress as well as the ongoing internationalization and networking of companies on the global market. These developments result in uncertainties in companies - uncertainties which have an effect on all areas of the organisational unit. To achieve competitive edge and ensure their businesses last long term, many organisations will have to better exploit their innovation potential. Two approaches are discussed in this context in management science and practice.

Corporate entrepreneurship (CE) is seen as a special form of entrepreneurship and is an independent concept which transfers the entrepreneurial behaviour of the entrepreneur from an individual to an organisational level (Covin & Slevin, 1991; Jennings & Lumpkin 1989; Miller, 1983). In literature, CE is examined under various names (Parker, 2011). While Pinchot (1985) talks of it as intrapreneuring or intrapreneurship, von Hippel (1977) uses the term corporate venturing (CV). In addition, terms such as internal CE (Schollhammer, 1982), strategic renewal (Guth & Ginsberg, 1990) as well as internal ventures and new business venturing (Roberts & Berry, 1985) are used. A prevalent definition describes CE as a process "…whereby an individual or a group of individuals, in association with an existing organisation, create a new

[5] A German version of this study was published in a double-blind peer-reviewed journal Zeitschrift für KMU und Entrepreneurship (ZfKE). The study was written together with co-author Dr. Andreas Kuckertz (See Allmendinger & Kuckertz, 2016).

organisation or instigate renewal or innovation within that organisation" (Sharma & Chrisman, 1999, page 18). Alongside corporate venturing (CV) and strategic renewal, innovations are thus seen as an independent activity, the origin of which however lies within the organisation (Guth & Ginsberg, 1990).

Open innovation (OI) is the second approach which deviates from the traditional image of the innovation process and describes it as a multilayer (open) search and solution process which takes place between an organisation and external players. This is intended to increase innovation potential.

In contrast to CE, the term OI tends to be used uniformly in literature (Dahlander & Gann, 2010). Chesbrough and Bogers define OI "[…] as a distributed innovation process based on purposively managed knowledge flows across organisational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organisation's business model" (2014, p. 1). In this they refer to the holistic innovation process of an organisation and not, as described at the beginning, to just a special phase (Chesbrough, 2003). For the concept of OI, the three knowledge transfer processes *outside-in* (integration and generation of external knowledge), *inside-out* (externalization and marketing of internal knowledge) and *coupled* (a mix of inside-out and outside-in) play a major role (Gassmann & Enkel, 2004) throughout this main process: it is their goal to develop new innovations through various forms of activity and with external players or to use existing ones.

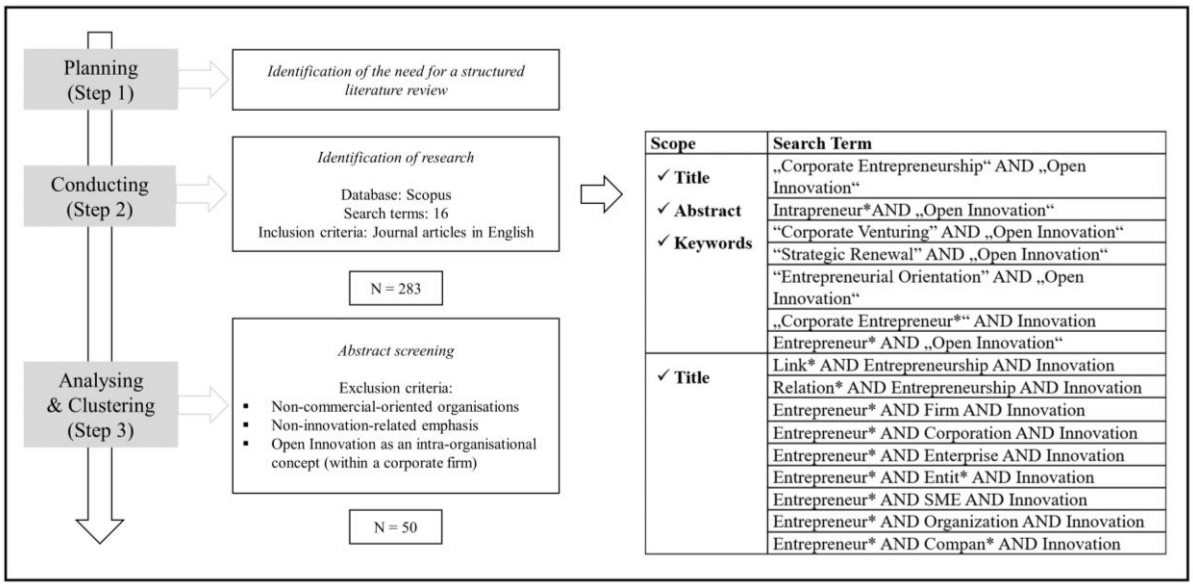
While CE is now seen as an autonomous research field (Dess et al., 2003) currently of major significance (Kuckertz & Mandl, 2013), OI is seen by some authors as a basic concept and not as an autonomous research field (Horn & Brem, 2013). Furthermore, purpose and content are contentious issues (Trott & Hartmann, 2009). Nevertheless the number of publications on OI has been increasing steadily for years now, indicating the increasing significance of OI (Dahlander & Gann, 2010).

Only very few authors have to date explicitly linked CE with innovations and in particular with OI (McFadzean et al., 2005). This is mainly due to the fact that investigations on innovations, and thus OI, to date are predominantly assigned to innovation literature (Landström et al., 2015). But the innovation dimension links both fields. Therefore the purpose of this article is to analyse the interplay of CE and OI in detail and identify resulting, open research questions.

2.2 Methodology

To be able to identify interfaces, a structured literature review is created which is becoming increasingly established in management literature (Kuckertz, 2012). This aims to reflect existing research results systematically and in a reproducible manner (Tranfield et al., 2003). To achieve consistent results, we drew exclusively on findings from articles published in English in specialist journals available in the Scopus database. The relevant sources were identified using 16 search terms (See Figure 2-1).

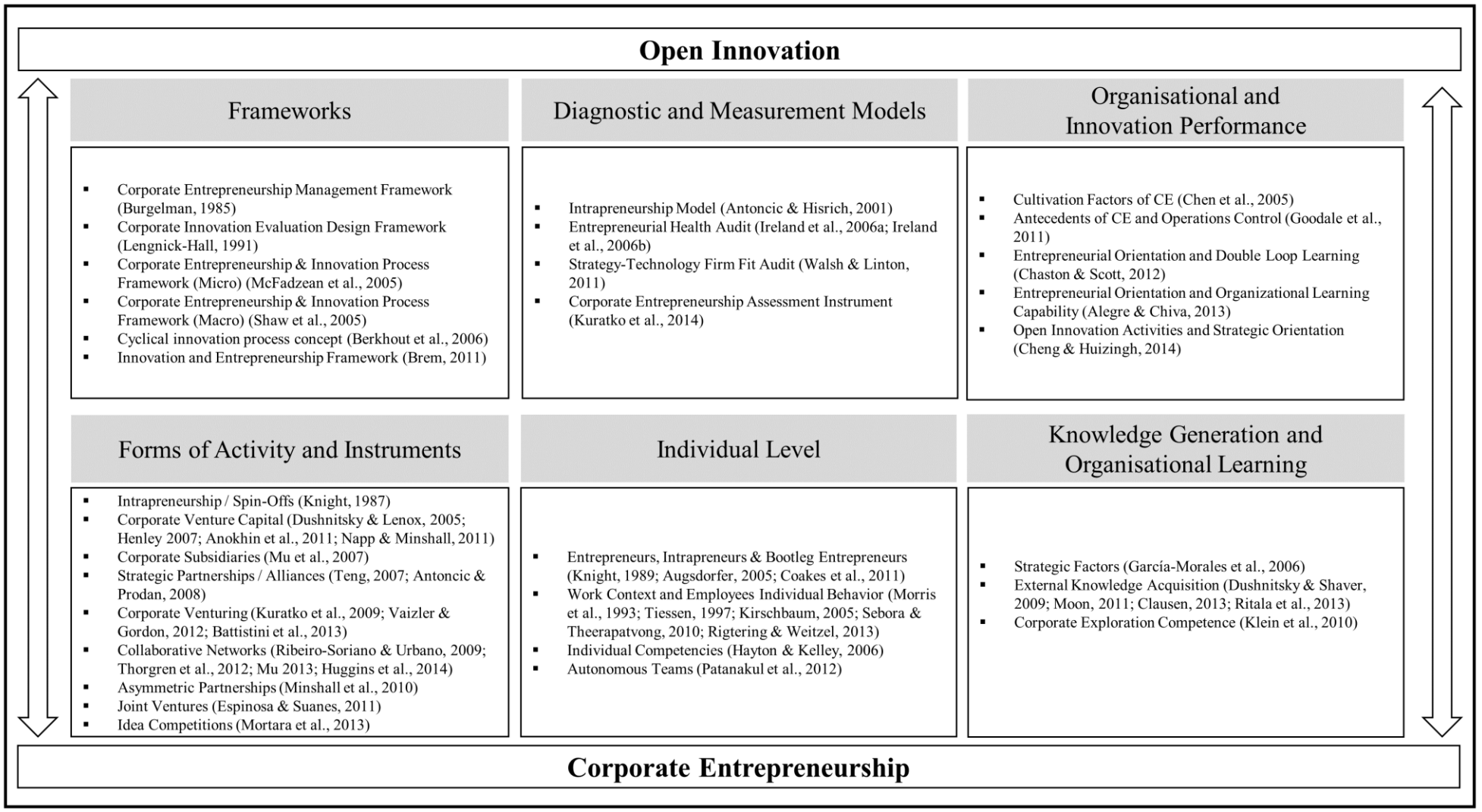
Figure 2-1: Overview on methodological procedure



Scope	Search Term
✓ Title ✓ Abstract ✓ Keywords	„Corporate Entrepreneurship“ AND „Open Innovation“
	Intrapreneur*AND „Open Innovation“
	“Corporate Venturing” AND „Open Innovation“
	“Strategic Renewal” AND „Open Innovation“
	“Entrepreneurial Orientation” AND „Open Innovation“
	„Corporate Entrepreneur*“ AND Innovation
	Entrepreneur* AND „Open Innovation“
✓ Title	Link* AND Entrepreneurship AND Innovation
	Relation* AND Entrepreneurship AND Innovation
	Entrepreneur* AND Firm AND Innovation
	Entrepreneur* AND Corporation AND Innovation
	Entrepreneur* AND Enterprise AND Innovation
	Entrepreneur* AND Entit* AND Innovation
	Entrepreneur* AND SME AND Innovation
	Entrepreneur* AND Organization AND Innovation
	Entrepreneur* AND Compan* AND Innovation

These cover the central concepts of CE and OI, synonyms as well as terms derived from the organisational context. All 283 articles identified were then systematised and analysed. Duplicates and an article which had been withdrawn were immediately rejected. Furthermore, articles focussing on non-commercial organisations, authorities and academic institutions were not taken into consideration. Articles which did not explicitly refer to innovation and concentrated on just one field of research were also excluded. The same is true of articles which see OI not, as it is presented here, outside the limitations of an organisation but only within the same organisation, namely as an interdivisional/interdepartmental concept. In total, 50 articles were included in the further analysis. These were independently sorted by two academics and classified into six analytic categories (See Figure 2-2). These categories are presented in detail in the following section using the selected articles.

Figure 2-2: Overview of analytic categories



2.3 Corporate Entrepreneurship and Open Innovation

2.3.1 Analysis of the conceptual Frameworks

Conceptual frameworks, which can illustrate correlations and directions of impact, help structure theoretical content. However, there are only a few frameworks in CE literature which directly refer to innovations. The strategic framework presented by Burgelman (1985) focusses on different organisational forms of activity. He assumes that only internal entrepreneurs can take responsibility for autonomous projects. The focus on the external surroundings is thus completely neglected. With the diagnostic framework of Lengnick-Hall (1991) fundamental sources of interference within the innovation activity field, such as for example problems of resource allocation or false assumptions in product decisions, are identified at an early stage to avoid bad investments. The advantages of the OI approach, with which resource flexibility can be established (Sisodiya et al., 2013) or early support is possible with the involvement of customers in the product innovation process (von Hippel & Katz, 2002), are not mentioned.

McFadzean et al. (2005) are the first to develop an interdisciplinary process framework based on existing CE and innovation process models. The authors stress that the factors entrepreneurial attitude, entrepreneurial vision and entrepreneurial activity of the corporate entrepreneur are not taken into account in previous models. In the process, they also mention the significance of the social interaction of the corporate entrepreneur with the external environment and the organisation's need to systematically gauge the internal and external environment although there is no further substantiation of either point. Shaw et al. (2005) expand this model and also take the macro perspective into consideration with the environmentally related innovation drivers which impact the CE-I process. With regard to OI they take the strategic integration of external players into consideration in the macro model and, in the micro model, *ideas from external sources* in the innovation process – even though further explanations are lacking. However, they do stress that this process is not to be understood in a linear fashion and that the individual phases may well overlap and be combined. For the future, they demand a more detailed examination of, particularly, the communication between the different positions within an organisation and the consideration of the organisation as a collective unit in terms of external cooperations.

The framework of Berkhout et al. (2006) is not based on an innovation process, but on a cyclical and circular interaction process with the drivers creativity, knowledge and entrepreneurship within a network of multi-partnerships. With regard to OI, it is an extreme variant of the OI

process although the specific relation to CE is not illustrated. Brem (2011) criticises the fact that there is no consensus in literature as regards processes to simultaneously steer entrepreneurial and innovative tasks. He accentuates the significance of external collaboration in the idea generation phase and sees OI as one of the main success factors in the long-term success of an organisation. However, his framework represents a micro model which neglects specific influences from outside and the different knowledge transfer processes (Gassmann & Enkel, 2004) along the innovation process. Thus:

There is a specific need for conceptual frameworks which consider CE and OI together and on an equal footing.

2.3.2 Analysis of the Diagnostic and Measurement Models

In terms of measuring CE, various measurement models have been created at organisational and individual level each with a different number of dimensions (Covin & Slevin, 1991; Lumpkin & Dess, 1996). Antoncic and Hisrich (2001) use the intrapreneurship model to measure the influence on organisational performance. In the process, they take into account the internal and external environmental characteristics of an organisation. However, there is a lack of OI-specific components in the organisational and environmental dimensions, such as, for example, new knowledge generation through collaboration with external partners. Furthermore, the authors concede that they mainly focus on product innovations and explicitly not on technological innovations, although the latter are often results of OI activity due to their complexity.

Ireland et al. (2006a, 2006b) offer a method of measuring CE directly with their Entrepreneurial Health Audit which, in the form of a questionnaire for decision-makers, determines the degree of entrepreneurship of an organisation. This focuses exclusively on the internal environment of an organisation and does not include the external environment. The aspect of the most suitable degree of openness for an organisation depending on its innovation and overall performance is, for example, lacking. With regard to content, the questionnaire developed does not refer to relevant aspects such as the diversity of innovation phases and partners (Lazzarotti et al., 2010) or the fundamental capacity to absorb knowledge (absorptive capacity) (Wagner & Piller, 2012), although the approach emphasises the particular significance of the flow of knowledge for an organisation.

The Strategy-Technology Firm Fit Audit from Walsh and Linton (2011) is a decision support model for entrepreneurial organisations of all sizes which identifies and assesses situations (incl. OI scenarios) which open up new opportunities. However there is no explanation of the derivation and substantiation of the model.

The Corporate Entrepreneurship Assessment Instrument (CEAI) was further developed by Kuratko et al. (2014) based on their own preliminary work. This makes it possible for established organisations to create a status report on their entrepreneurial and innovative level allowing them to promote an internal environment which will support the organisation's own CE activities. Even though the CEAI exclusively focuses on the internal environment of an organisation, there is at least mention of the fact that information must flow between the external environment and the organisation. However, this central aspect of OI is not addressed further in the questionnaire. Thus:

There is a specific need for theoretically reasoned diagnostic and measurement models which integrate CE and OI and also reflect the degree of openness of an organisation.

2.3.3 Analysis of the influence of CE and OI on Organisational and Innovation Performance

Alongside the measurement models, their deployment also plays a significant role as they can be used to illustrate interdependencies. Chen et al. (2005) examine the relation between CE and corporate innovation performance. The organisational performance is improved with different types of innovation and entrepreneurial plans. However, aspects of OI are not taken into consideration either in the defined innovation factors or in the factors of entrepreneurial plans. The study by Goodale et al. (2011) falls back on the dimensions of CEAI and examines the moderating effect of operational control on CE and innovation performance. However, innovation performance is only measured with factors concerning the internal environment and thus contains no OI-relevant aspects.

Chaston and Scott (2012) analyse the significance of entrepreneurial orientation (EO), double loop learning (DLL) and OI with regard to organisational performance. They discover that organisations with EO tend to engage in effective and iterative learning forms: DLL. They also prove that the performance of organisations engaging in OI tends to be higher. Organisations with OI also tend to engage in DLL. The direct connection between EO, OI and performance is not measured.

Alegre and Chiva (2013) look at the relation between EO and organisational performance with the mediation factors of organisational learning (OL) and innovation performance and discover that EO promotes OL and innovation performance and that, thanks to them both, EO has a positive influence on organisational performance. However, no OI-specific elements are taken into consideration in the model.

Finally, Cheng and Huizingh (2014) examine OI activities with regard to innovation performance and how strong the moderating influence of strategic orientation between OI and innovation performance is. All OI activities have a significant positive influence on innovation performance. Furthermore, EO moderates the relationship of OI to innovation performance much more strongly than market or resource orientation. The authors suspect that EO is a good basis for OI. Thus:

There is a palpable need to identify further moderating factors in order to create a better understanding of the positive effect of CE – combined with OI – on organisational performance.

2.3.4 Analysis of Forms of Activity and Instruments

Forms of activity and instruments help organisations in their entrepreneurial actions. In the context of CE and OI, there is an increasing rise of new instruments and a parallel extension of existing ones in comparison to their original purpose. Mu et al. (2007) emphasise that subsidiaries play a special role within the parent organisation as they act as autonomous units, detect local market changes at an early stage and can transfer relevant knowledge. With regard to OI, they no longer act hierarchically but in a network. Mu (2013) also feels that organisations can innovate more dynamically with the help of their network capability, external knowledge and OI in combination with internal knowledge. Thorgren et al. (2012) show a positive indirect connection between the choice of partner and CE in strategic networks of small and medium-sized enterprises.

According to Ribeiro-Soriano and Urbano (2009) organisations will only be able to continuously discover new markets with informal and not primarily capital-oriented cooperations. They go on to illustrate that an organisation's effective knowledge management depends on its ability to cooperate internally (collective entrepreneurship) and externally (collaborative entrepreneurship). Minshall et al. (2010) and Huggins et al. (2014) emphasise that, in spite of challenges, that established organisations who want to engage in OI can benefit

from cooperations with entrepreneurial organisations, such as startups and universities, as they represent a promising source of knowledge and innovation.

A classic instrument of such cooperations is the joint venture (JV). However, according to Espinosa and Suanes (2011), JVs are more suitable for CE in the form of strategic renewal and new organisational ventures as these are attended by a drain of knowledge. In terms of OI, however, this does not have to be a disadvantage as, with a cooperation partner, you are pressing ahead with a closed joint project on a contractual basis to achieve greater innovation performance with a simultaneous increase in efficiency. But it is not an instrument for realizing as non-bureaucratic an exchange of knowledge as possible. Antoncic and Prodan (2008) and Teng (2007) examine the extent to which strategic partnerships promote CE. In terms of innovation, the latter comes to the conclusion that JVs reduce opportunistic behaviour due to capital participation, that organisations can split the efforts involved in research in terms of costs and risks with R&D partnerships, and that open and specific knowledge can be acquired through learning partnerships.

A further instrument is the corporate venturing (CV), which in terms of OI has to maintain meaningful relations with internal and external partners to realise a large number and high quality of transaction opportunities (Vaizler & Gordon, 2012), and which enables organisations to learn more about, for example, new technologies (Kuratko et al., 2009). According to Battistini et al. (2013) particularly CV departments are in an ideal position to leverage external innovations with the help of the internal capacity for innovation. According to Anokhin et al. (2011), a form of CV, the corporate venture capital (CVC), can play a considerable role in identifying external innovative ideas and, long term, increasing innovation performance due to the increasing opening of organisations. Napp and Minshall (2011) see CVC as part of a broad OI strategy to generate synergies between established organisations and innovative entrepreneurial organisations. Dushnitsky and Lenox (2005) prove that this can provide access to innovative knowledge. Henley (2007) sees CVC as an effective CE instrument suitable for discovering radical innovations outside an organisation.

Idea competitions are a flexible instrument for acquiring external knowledge and can, according to Mortara et al. (2013), also be implemented with autonomous organisation forms such as CVC, incubators and spin-offs depending on the legal situation as regards intellectual property and independently of the internal R&D department. However there is still the risk of employees potentially rejecting impulses from outside (in what is called the 'not-invented-here' syndrome), something which can only be reduced with as early an integration as possible. In the context of

innovation, Knight (1987) also stresses the significance of independent spin-offs and acquisitions of entire organisations or parts thereof. Trading licenses can also be seen as a well-established OI activity (Enkel et al., 2009). Thus:

Forms of activity and instruments of CE and OI overlap. There is nevertheless a palpable need to develop further, integrated instruments which are simultaneously based on entrepreneurial ideology, the concept of the degree of innovation and openness.

2.3.5 Analysis of the Individual Level

Resources such as human capital are essential innovation drivers (Hayton, 2005). According to Kirschbaum (2005) the style of leadership also changes with continuous innovation development. He stresses that profitable (open) innovations depend on an entrepreneurial culture and teamwork and not on a process. Patanakul et al. (2012) compare four team structures for new product developments as regards the relative effectiveness. Autonomous teams usually work outside organisational hierarchies and have the potential for a high degree of collaboration. They show that autonomous teams are particularly effective in projects aiming to produce radical innovations, something which is also relevant for strategic innovations and CE.

Rigtering and Weitzel (2013) examine to what extent the work context influences the entrepreneurial behaviour of employees and what effect it has on entrepreneurial projects. Only innovativeness and personal initiative, and not the willingness to take risks, have a role to play for the effective implementation. Relevant aspects of OI are not taken into account.

Hayton and Kelley (2006) develop an entrepreneurial competency framework for promoting CE. They stress that innovating and brokering competency include the personality trait *openness to experience* which describes the willingness to glean new knowledge from a range of different sources. This, along with networking, can be classified as a special feature with regard to OI. However, networking capability is attributed entirely to brokering competency as the broker or gatekeeper acts as a disseminator of knowledge and thus as an information interface to the outside.

Sebora and Theerapatvong (2010) analyse the effects of internal and external influences on idea generation, risk taking and the proactiveness of managers and thus their entrepreneurial behaviour. However, the external factors do not contain any constructs relevant to OI rather

only surveys on market features and market scope. Knight (1989) compares corporate entrepreneurs with independent entrepreneurs as regards the relevant hurdles for the development and commercialisation of innovations. In spite of potential conflicts of interest, he suggests engaging in cooperative agreements between them to bypass these hurdles. Coakes et al. (2011) point out that the corporate entrepreneur should develop knowledge exchange communities to bring sustainable innovations to market in good time. They see this aim as the link between entrepreneurship and innovation. This requires organisational learning which means experimenting, risk taking and interacting with the external environment. In his work, Augsdorfer (2005) refers to the corporate entrepreneur as a bootleg entrepreneur, who secretly pursues his own innovation projects without approval from the management. He concludes that bootlegging nevertheless makes a positive contribution to organisational goals. The significance of the external environment for bootlegging is, however, not part of his investigations.

Morris et al. (1993) ask themselves to what degree organisations, which request entrepreneurial behaviour, can generate more entrepreneurship through individualism or collectivism. The collective orientation of individuals includes paying less attention to personal interests and is distinguished, among other things, by sharing and cooperation. In contrast, individuals with an individualism orientation are concerned about their own interests and reaching personal goals. The authors ultimately illustrate that entrepreneurship is less pronounced with high individualism and collectivism than in combination. Whether a high degree of collectivism, which is indicative of a greater willingness to cooperate, also applies to the same degree for cooperations outside the organisation and whether this has a different effect on the entrepreneurial attitude of the organisation, is not investigated. Tiessen (1997) also falls back on the dimension of individualism/collectivism, but does not look at these two variables as extreme values of a continuum. Instead his framework is based on the dimensions individualism/collectivism and the entrepreneurial function. The latter recognises that entrepreneurship requires two activities: the generation of diversity with innovations and the effective deployment of internal and external resources. He concludes that individualists generate ground-breaking innovations which are implemented and improved by collectivists. Individualists build their resources internally on performance-based incentives and externally on contract-based relations. Collectivists make use of their own resources internally with clan-like unions and externally through close relations to other organisations. He also shares the view that both orientations can lead to more entrepreneurship. Thus:

The psychological dimension of CE and OI is comparatively well researched. But there is still a palpable need to conduct further analyses which will shed light on the interplay of the organisational framework, individual characteristics and external factors.

2.3.6 Analysis of Knowledge Generation and Organisational Learning

The ability of an organisation to learn is a prerequisite for change and innovation, but is something that is mostly ignored in entrepreneurship literature (Stopford & Baden-Fuller, 1994; an exception being Sirén et al., 2012). Particularly the generation of new knowledge and the absorption of external knowledge are important factors in this. García-Morales et al. (2006) examine factors which influence the construct of entrepreneurship, shown by organisational innovations (ORI) and OL. They also ascertain that ORI and OL have a positive effect on organisational performance although no OI-specific elements are taken into consideration. The authors recommend the analysis of further strategic activities (e.g. networks) for entrepreneurship.

Klein et al. (2010) see the development of what is referred to as entrepreneurial research competency as necessary for an organisation to be able to effectively use all sources of innovation. They understand this as the dynamic capability of an organisation which is only enabled with the absorptive capacity for knowledge resources, a suitable structure and culture. Furthermore these organisations have a culture dominated by an OI vision. Moon (2011) examines several factors (including absorptive capacity and the proportion of employees with university education) attributing to them a significant role in the openness of an organisation to external sources of knowledge. Clausen (2013) discusses the relation between the absorptive capacity and the ability of an organisation to engage in an innovation cooperation with external parties. His results show that the factors internal R&D, training and skilled personnel are central aspects of the absorptive capacity for knowledge resources and are in a positive connection with the innovation cooperation.

Dushnitsky and Shaver (2009), however, use the CVC paradox to indicate the limits of interorganisational knowledge acquisition. They are referring to the variable probability of CVC investments depending on the strictness of the system of rules in reference to intellectual property when the entrepreneur's invention falls into the product segment of the CVC organisation because the entrepreneur fears a copy. Finally Ritala et al. (2013) examine the prerequisites for an organisation's decision to use different external sources of knowledge for

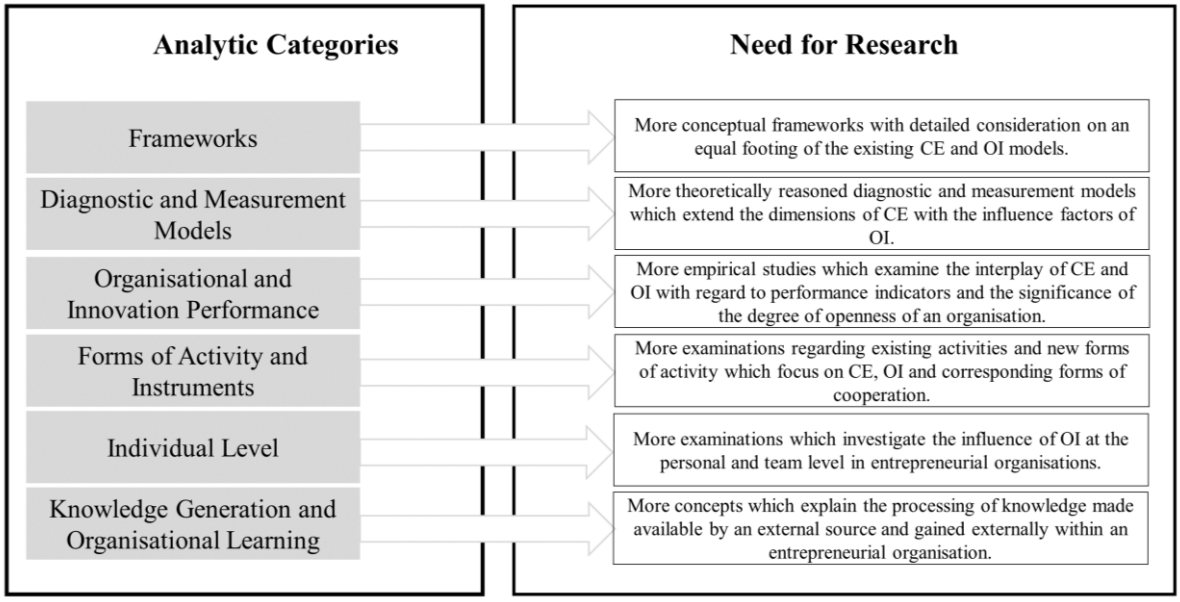
R&D and innovations. For this purpose, they analyse organisations in terms of their strategic orientation with regard to the use of specialised and open knowledge search strategies. Only organisations with high EO select all search strategies. Consequently organisations should take EO as the most relevant option if they want to use several external sources of knowledge. Thus:

The significance of knowledge for an organisation and for successful CE and OI activities is undisputed. But there is still a palpable need for theoretically sound concepts which explain the processing of knowledge made available by an external source and gained externally within an entrepreneurial organisation.

2.4 Concluding remarks and open research questions

By means of a literature review, the two independent concepts CE and OI were compared and analysed using six analytic categories. The goal was to identify intersecting sets and illustrate open research questions (See Figure 2-3). As a result it can be noted that the relationship of both phenomena to one another has not yet been researched sufficiently although innovativeness is the central dimension of CE.

Figure 2-3: Illustration of the need for research



On the one hand there is no framework which sufficiently and comprehensively takes the special aspects of OI, namely the external perspective and its influences on the organisation into consideration. For example, the adaptation of the innovation process to the dynamic and increasingly technological market conditions offers space for further, differentiated

examinations. Every individual process phase has to be examined more closely due to its alternating and iterative character depending on the relevant organisational structure and with regard to its contribution to innovation and innovation performance.

Alongside the existing frameworks, the existing CE diagnostic and measurement models will also have to be extended in terms of innovation dimension by the influence factors of OI and will have to be defined more clearly according to the individual organisation levels and units, and innovation performance will have to be differentiated more clearly in terms of origin. With relation to organisational and innovation performance, the degree of openness of an entrepreneurial organisation in particular can be an important object of examination depending on the organisation size and sector (Elmquist et al., 2009).

There is a considerable overlap between CE and OI in terms of their forms of activity. Instruments to date such as JVs, networks, partnerships and CVC will have to expand their competency framework and be verified and compared in terms of the degree of innovation and effectiveness. New kinds of activity forms, geared to innovations, such as spin-out and spin-in (spin-along approach) (Michl et al., 2012), and often autonomously run contact points, such as incubators (Aernoudt, 2004) or accelerators, can be an object of investigation. Against this backdrop, the significance of all entrepreneurial and innovative activities in relation to their individual contribution to innovation and organisational performance is also increasing which in turn requires new measures and measurement models for determination (Cheng & Huizingh, 2014).

Further examinations can also place the focus on the relationship between an organisation and its potential partners in, for example, asymmetric partnerships (between large established and startup firms) (Minshall et al., 2010) and symmetric partnerships between purely entrepreneurial organisations. Opportunities for differentiated investigations regarding the choice of suitable cooperation partners and the decision process this is based on (search, identification, selection, determination, evaluation) (Yoon & Song, 2014) also present themselves. The expansion of existing decision criteria with specific entrepreneurial criteria such as, for example, the degree of entrepreneurial intensity of a partner as the basis for a decision also has to be discussed and its relevance and compatibility verified empirically (Das & He, 2006). Ultimately, aspects of behaviour during cooperation and measures for the effective and efficient management of cooperation partners on the whole in entrepreneurial organisations offer scope for lots of further investigations.

Alongside the influence of OI at an organisational level due to activities, the influence of OI at an individual level is also relevant. Organisations have to see employees more as independent entrepreneurial points of contact to the outside who can act as innovative absorbers and givers of knowledge (Kuratko et al., 2014). The significance of independence and freedom of autonomous and external teams regarding innovation performance and effectiveness has not been researched exhaustively (Patanakul et al., 2012). Accordingly, approaches have to be developed for organisations to encourage employees with innovative approaches to stay with a company and at the same time give them access to external sources of inspiration.

Ultimately the significance of the approaches of strategic entrepreneurship (Ireland et al., 2003) and collaborative entrepreneurship (Ribeiro-Soriano & Urbano, 2009) should be discussed more intensively for CE as these already take up the core concept of OI and establish connections to the external environment and its influential factors.

3 Money alone doesn't bring happiness. Exploring large firms' startup-oriented partnership capability at the formation stage.[6]

Abstract

Past studies of Corporate Entrepreneurship and Open Innovation conclude that the speed and complexity of innovation require large firms to rethink their organisational structures and processes to be able to partner with various external actors. Consequently, large corporate firms try to find new and suitable partners such as highly-skilled and technology-driven startups to avoid being left behind in terms of innovation. Realizing that they cannot compete on their own in highly innovation-driven and competitive global markets, firms enter asymmetric partnerships in the hope of creating innovations to support their core business or extend it. Using a theory-elaboration approach based on partnership capability theory, the current research focuses on the widely unexplored field of non-equity-related innovation-oriented partnerships between large corporations and startup firms. Taking a large-firm perspective using information from 17 firms, this study identifies 15 learning mechanisms, that construct firms' partner-specific partnership capability and enhance partnership capability theory. Consequently, the findings also reveal that large firms are willing to proactively pave the way for asymmetric partnerships to become an innovation partner of choice for startup firms and entrepreneurs.

3.1 Introduction

The last decade has seen the market shares of large and historically innovative firms decline. An increasing number of established entities are faced with highly-competitive, highly-technological and supremely dynamic market environments (Kuckertz et al., 2010). Supportive approaches and concepts to overcome these innovation-related challenges are found in entrepreneurship and innovation literature and include Corporate Entrepreneurship (CE) (Stopford & Baden-Fuller, 1994) or Open Innovation (OI) (Chesbrough, 2006). In particular, the OI paradigm has become a huge basic conglomerate of research that helps large firms to produce a continuous flow of influential innovations with the assistance of inter-organisational partners (de Man & Duysters, 2005).

[6] This revised article is currently under consideration at the double-blind peer-reviewed journal Technovation. Earlier versions have been accepted for presentation at ACERE Conference 2016 in Gold Coast, Australia and at the ISPIM Innovation Conference 2016 in Porto, Portugal.

For large corporate firms, OI essentially means opening the organisation to external stakeholders to find and manage new collaborative innovations. The list of potential stakeholders also includes less ubiquitous partner types like competitors or startups (Bahemia & Squire, 2010). Using external partners, large firms are constantly looking for competitive advantages, learning opportunities, specific resources, or strategic business potential. In doing so, they hope to get access to new technologies (Narula, 2004), talented people, possibly new customer segments, or simply inspiration in terms of an innovation-friendly corporate culture.

Large firms have realised that they are not able to react as adequately as they might wish to technological trends and new customer needs. Their structures and processes tend to be less flexible, which forces them to engage proactively with the startup community and to learn from it (Weiblen & Chesbrough, 2015). Hogenhuis et al. (2016) identified five key capabilities of startups desired by large firms: creativity, technological expertise, problem-solving skills, project management skills, and manufacturing capabilities.

There has been little empirical research on partnerships between large corporate firms and startups (Spender et al., 2017) and recent studies see room for further research (Minshall et al., 2010; Weiblen & Chesbrough, 2015; Hogenhuis et al., 2016; Jang et al., 2017), despite this relationship and its managerial effects being relatively well-studied from an exclusive entrepreneurial firm-level perspective (Granstrand & Sjölander, 1990; Larson, 1991; Shan et al., 1994; De Meyer, 1999; Stuart, 2000; Kelly et al., 2000; Katila et al., 2008; Prashantham & Birkinshaw, 2008; Vandaie & Zaheer, 2014; Usman & Vanhaverbeke, 2017).

A large firm/startup relationship is labeled asymmetric, the asymmetry referring not only to differences in the size and age of the entities, but also in their resource capacities, market dominance, power to execute initiatives, or financial strength (Blomqvist et al., 2005; Das & He, 2006). Most existing studies emphasise the problems, risks, and challenges inherent in asymmetric partnerships (Doz, 1987; Alvarez & Barney, 2001; Prashantham & Birkinshaw, 2008; Katila et al., 2008; Diestre & Rajagopalan, 2012) resulting from low commitment, mistrust, differing goals, cultural differences or simply the inability of managing partnerships (for a structured collection of reasons see Forrest & Martin, 1992). With reference to the last reason, one key aspect might also be that large firms have not implemented the best learning mechanisms to develop the ability to manage in an asymmetric partnership context.

This assumption is based on the findings that large firms are unable to develop a suitable action plan (Hogenhuis et al., 2016), because they simply do not know how startups operate (Minshall

et al., 2010). Moreover, large firms require a more holistic understanding of the natural limitations of startups (Stinchcombe, 1965; Aldrich & Auster, 1986) when they want to make asymmetric partnerships work (Hogenhuis et al., 2017).

Generally, firms have recognised that implementing effective collaboration projects depends heavily on single innovation partners (Fritsch & Lukas, 2001; de Faria et al., 2010) owing to the individual character of their contribution to innovation performance (Du et al., 2014). Consequently, the number of partners employed, or the composition of the partner portfolio could also lead to different innovation performance effects (Bengtsson et al., 2015).

If large firms are willing to leverage the full innovation potential available from collaborating with startups and particularly to develop a sustainable strategic advantage they must put themselves in a position to enhance their existing individual partnership capability through the development of partner-specific capabilities. Such capabilities might enable large firms to implement effective partnership management (Wang & Rajagopalan, 2015) and harvest better collaborative performance effects, especially during the crucial early stages of the partnership life cycle. Consequently, this study aims to answer the research question:

How do large corporate firms develop a startup-oriented partnership capability at the formation stage?

The results of this study contribute to the OI and highly-fragmented partnership research. They show that large firms are willing to proactively pave the way to enter partnerships with startups and develop a startup-oriented partnership capability to become an innovation partner of choice.

This paper is structured as follows: The second section focuses on relevant literature on partnership management, asymmetric partnership management and startups. In addition, this study presents a research framework derived from the partnership capability and partnership development theory to answer the research question. The third section describes the methodology and exploratory data collection procedure that contains data from 17 case studies. The fourth and fifth section presents results, key findings and discussion, while section six concludes.

3.2 Theoretical background and conceptual research framework

3.2.1 Theoretical background

Innovation-oriented dyadic and asymmetric partnerships

Literature on OI, and especially on partnerships, is highly fragmented and contains numerous intersections (Tether, 2002). The term partnership is one of many interchangeable expressions used that also include inter-organisational relationships, alliance, co-operation, collaboration or coopetition. This study exclusively focuses on large firms' and their experience in partnerships with startups in the context of innovation. Large firms generally have different reasons to enter innovation-oriented partnerships to smaller firms, including: reduction and sharing of the costs of R&D, shortening of product life cycles, or reducing time to market (Hagedoorn, 1993). Consequently, this study follows the definition of Tether (2002), who sees innovation-oriented partnerships as an "active participation in joint R&D and other technological innovation projects with other organisations, [which] does not necessarily imply immediate commercial benefits from the venture" (p. 949, 2002). This definition excludes sub-contracting work with no active participation.

Partnerships can not only be differentiated in terms of their context but also in terms of their arrangement, design, or structure. Therefore, partnerships can be also treated as a spectrum (market to hierarchy) which vary in terms of the degree of intensity, commitment, integration, formality, control, or autonomy (Pekár & Margulis, 2003; Van de Vrande et al., 2006; Minshall et al., 2010). This study focuses on dyadic (rather than portfolio) partnerships between independent companies through informal and formal agreements but not on purely equity-related partnerships. The latter might terminate or modify asymmetric partnerships, because startups (and especially their entrepreneurs) might relinquish the pursuit of their own goals (Doz, 1987; de Man & Duysters, 2005).

Studies that focus on partnerships between unequal innovation partners such as large corporate firms and startups (e.g. Alvarez & Barney, 2001), venture capital firms and startups (e.g. Cable & Shane, 1997; Shepherd & Zacharakis, 2001) or university parents and university spin-offs (e.g. Soetanto & van Geenhuizen, 2015) use the terms asymmetric partnerships (Minshall et al., 2010; Hogenhuis et al., 2017), asymmetric co-operation (Jang et al., 2017), asymmetric collaboration (Blomqvist et al., 2005; Hogenhuis et al., 2016), asymmetric alliance (Pérez et

al., 2012) or asymmetric new product development alliances (Kalaignanam et al., 2007). However, a specific definition for asymmetric partnerships is still missing.

Generally, the asymmetry may result from the natural imbalance in terms of organisational size (Das & He, 2006), market power (Kelly et al., 2000) or information (Kalaignanam et al., 2007). Furthermore, these partnerships are characterised by asymmetric trust (Wang et al., 2015; Graebner, 2009) or even asymmetric outcome distribution of a specific collaborative project (Gulati, 1998; Doz, 1987; Alvarez & Barney, 2001).

Management of partnerships

The discipline of partnership management is an under investigated phenomenon (Spekman et al., 1998; Ireland et al., 2002) that includes all main tasks and sub-activities regarding the partnership life cycle. Those include forming, developing, operating, maintaining, or terminating a partnership. Several authors mention failure rates of 50% to 60% of all strategic partnerships (Duysters et al., 1999). But most such arrangements fail because of weak preparation and poor execution at all stages of partner management-related activity (Niederkofler, 1991; De Meyer, 1999, Holmberg & Cummings, 2009). Niederkofler summarises that, "[a] major cause for cooperative failure is managerial, and therefore controllable and potentially avoidable" (1991, p. 237).

Slowinski and Sagal (2010) emphasise the importance of preparing for partnerships, because diligent management can improve the success of the partnership, and thus generate greater innovation success. In the absence of careful preparation, too many differences at the start can easily lead to disastrous results (Doz, 1987). Consequently, effective partnership management is a decisive and challenging business activity because innovating with others goes along with a high degree of complexity, higher transaction costs, a higher probability of conflicts of interest based on opportunistic behaviours and constant changing roles and positions of individual managers as the partnership evolves (Hoffmann, 2005). Managers are rarely specifically trained in or prepared for creating conditions that enable effective collaborative relationships (Spekman et al., 1998), which means achieving partnership success is very challenging.

In the face of the many critical factors that can cause innovation project failure (van der Panne et al., 2003), organisations must establish a well-organised innovation management technique and ensure it evolves if their partnerships are to be a competitive success (Adams et al., 2006). It follows that thoughtful and systematic collaborative innovation management is also necessary

to create joint outcomes and achieve mutual goals (Holmberg & Cummings 2009) with partners. Therefore, partnership management must always pursue the goal of creating and maintaining trust to build a solid fundament for win-win relationships (Niederkofler, 1991).

Management of asymmetric partnerships

Research has established that numerous collaborative innovation studies fail to consider managerial issues such as partnership agreement types and characteristics (e.g. size) of the partner firms involved (Das & He, 2006). Consequently, existing studies differ in their sample selections and the perspectives adopted (e.g. balanced, exclusively large firm, or exclusively startup firm), which makes a direct comparison difficult; however, all of them offer valuable insights into how large firms' might develop an ability to manage asymmetric partnerships.

The study of Forrest and Martin (1992) surveyed managers from small and large firms on reasons for entering partnerships and the results (successful and unsuccessful partnerships) of those partnerships. Managers of large firms evaluate open communication and a mutual agreement on strategic objectives to be the most important success factors. At the same time partnerships fail when the partners are incompatible or there are issues with the management of the partnership. Alvarez and Barney (2001) also offer managerial advice to large firms interested in entering asymmetric partnerships, stating they should choose entrepreneurial partners able to generate several technology streams, and who have sufficient management skills or who already know whether they want to pursue growth-oriented goals. Minshall et al. (2010) provide a practitioner guide that includes the most common challenges from four different perspectives (startup, large firm, investor, and legal). They illustrate management approaches and strategies such as "developing an innovation strategy" or "use of intermediaries" to overcome these challenges. Taking the partnership development process into account, Hogenhuis et al. (2017) present seven managerial key problems such as those relating to speed or mindset that occur before and during asymmetric partnerships and recommend different solutions to these problems to be applied at an early stage.

Weiblen and Chesbrough (2015) present and compare four models that allow corporations to engage with startups. They distinguish them on two dimensions: equity involvement and the direction of innovation flow. Based on interviews with staff from corporations, startups, and other experts, the authors ultimately theorise that compared to prior approaches, equity as a key mechanism might increasingly be replaced by a connection through shared technologies. A similar approach is pursued by Jang et al., (2017), who explore the complementary potential of

asymmetric partnerships between large firms and SMEs. As a result, they suggest four different OI collaboration types (bilateral, one-way, outsourcing, and integrated) based on the two dimensions direction of knowledge interaction and degree of new knowledge, and outline how large firms could employ them to plan their innovation strategies with external and smaller partners.

Following a case study of an asymmetric partnership, Blomqvist et al. (2005) emphasise the importance of trust, in particular during the negotiating and contracting phase. Moreover, they advise managers from both sides to invest in the contracting process itself, as it improves the mutual understanding of culture and goals. Wang et al. (2015) focus on the meaning of asymmetric trust during three stages of the collaboration process between large enterprises and SMEs. They conclude that trust in that context is always characterised by imbalance that should be addressed early and proactively.

Startups as innovation partners for large corporate firms

Ireland et al. emphasise that, "effective alliance management begins with selecting the right partner" (2002, p. 413). High-tech startups can serve as a source of creative destruction (Schumpeter, 1942) and can thus be valuable actors in economic and innovation ecosystems, because they are responsible for economic growth and job creation (Kuckertz et al., 2015).

However, the OI and partnership research on startups, while extensive, has been criticised for often ignoring the impact of the emerging innovation partner types in today's innovation network (Bahemia & Squire, 2010; Mortara et al., 2013). Van der Vrande et al. (2009) attribute this shortcoming to the limited number of identifiable innovation activities in micro-enterprises with fewer than 10 employees. Laursen and Salter (2014) add that there is a lack of data available on the survival rates of these small startups.

The analysis of startups and their characteristics can be undertaken with various specifications, which makes precise comparison challenging. Some studies primarily link startups to one specific phase of their organisational life cycle or characterise them with a constantly high growth rate with a more or less indefinite end. Other studies emphasise startups' degree of innovation, degree of technology orientation, or degree of customer understanding, or the fact that they have not yet found their sustainable business model (Blank, 2013). Other studies describe "real startups" as aggressive ventures that primarily focus on the disruption of traditional businesses (Christensen, 1997).

Because validated information on growth rates is difficult to access, many researches focus on a mixture of different qualitative information based on startup characteristics. Consequently, the current research uses the startup definition of Das and He who define startups as entrepreneurial firms that are "generally young, small and highly innovative firms in industries with rapidly developing technologies" (p. 120, 2006). Additionally, this study exclusively focuses on startups as external and independent ventures led by independent entrepreneurs that do not originate directly in any corporate firm environment.

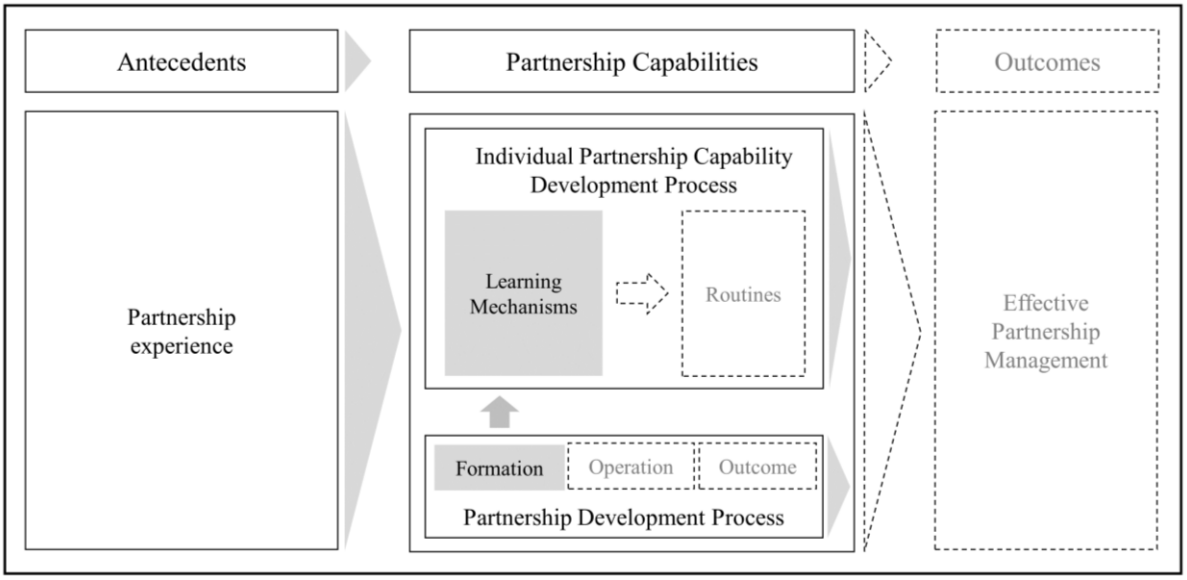
3.2.2 Conceptual research framework

Individual partnership capability of large firms

The partnership capability as an independent capability type originates with dynamic capability theory (Vogel & Guettel, 2013). It differs from other capabilities (such as strategic learning and change, technological innovation and adaptation, ambidexterity, microfoundations and acquisitions, and vertical scope) because of its specific learning mechanisms and capability development process. Dynamic capabilities are defined as a firm's "ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments" (Teece et al., 1997, p. 516).

Several similar definitions of partnership capability exist (Sluyts et al., 2010). Following Kale et al. the partnership capability construct describes "how effectively the firm is able to capture, share, and disseminate the partnership management know-how associated with prior experience" (2002, p. 750). Moreover, the firm must be able to "learn, accumulate, and leverage alliance management know-how" (Kale & Singh, 2007, p. 987). Wang and Rajagopalan refer to the stages of a partnership development and define partnership capability as, "[a] firm's ability to search, negotiate, manage, and terminate an individual partnership" (2015, p. 239). In summary, partnership capability, as a result of an ongoing organisational learning process, describes the ability of a firm to continuously generate and use knowledge, to holistically manage partnerships effectively. Wang and Rajagopalan (2015) review 100 empirically based articles to present the first systematic framework for the partnership capability construct. Combining their work with the findings of Heimeriks and Duysters (2007) and Das and Teng (2002), this study provides an adapted conceptual research framework (See Figure 3-1) to answer the previously presented research question.

Figure 3-1: Conceptual research framework (adapted from Wang & Rajagopalan, 2015; Heimeriks & Duysters 2007 and Das & Teng, 2002)



Wang and Rajagopalan (2015) split the partnership capability construct into three closely related components: the antecedents of the partnership capability (e.g. firm's partnership experience); the partnership capabilities themselves (e.g. Partner Search or Negotiation); and the outcomes of the individual partnership capabilities (e.g. effective partnership management). Because this work only empirically focuses on the experience of large firms and their ability to develop partnership capabilities, the outcome dimension is only implicit in part of this study.

Wang and Rajagopalan (2015) further specify their research framework because partnership capabilities can vary dependent on different levels. Consequently, all the mentioned components can be further segmented into firm-level capabilities (such as individual partnership capability and portfolio partnership capability) and partnership-level capabilities (such as dyad-specific partnership capability).

This study only explores the individual partnership capability of large firms (as a developing result of the sum of their learning mechanisms) based on their experience in an asymmetric partnership context. This study does not include aspects of the dyad-specific capability, because it demands another data collection procedure and can only be researched when data on both partners (in the same relationship) are available.

Partnership capabilities and its related processes

Effective partnership management (effectiveness as the degree to which an input of resources is favorable to achieving a specific goal) has become a competitive advantage and value creator for organisations (Ireland et al., 2002; Rothaermel & Deeds, 2006). To realise these advantages a strong focus on and understanding of content (the *why*) and process (the *how*) is required (Ireland et al., 2002). However, the importance of partnership process research in particular and also the role of process orientation in the analysis have long been neglected in the partnership management research (Spekman et al., 1998) despite partnerships underlying a developing sequence consisting of several steps and stages (Das & Teng, 2002). Since the mid-1990s, process-oriented studies and the development and application of process models have become very common in the partnership literature (Das & Teng, 2002) but also in other related domains such as entrepreneurship (Sarasvathy, 2001), CE (Burgelman, 1983), innovation (Rothwell, 1994) and OI (Gassmann & Enkel, 2004).

Partnership research suggests a strong process orientation supports the preparation and structuring to improve partnership management (Ring & van de Ven, 1994; Dyer & Singh, 1998) and the development of corporate firm's partnership capability (Heimeriks & Duysters, 2007). This applies equally to the development of the partnership itself (Das & Teng, 2002) with its operational activities dependent on the individual stages in the partnership life cycle (Schreiner et al., 2009).

The individual partnership capability development process

As mentioned above, partnership capability is not a static construct. It must be understood as a "multi-layered phenomenon" and dynamic process, which is developed continuously. Heimeriks and Duysters (2007) provide an interlinked concept, that describes the building process of firms' partnership capability and consists of the two micro-level building blocks learning mechanisms and organisational routines. Heimeriks and Duysters (2007) assume that the result of the process is equal to the degree to which firms are able to use mechanisms to integrate partnership-related knowledge and routines for managing partnerships.

To be specific, the partnership capability development process originates in the partnership experience, "the know-how on partnerships, which is generated through the firm's engagement in prior partnerships" (Sluyts et al., 2010, p. 179). Partnership experience is one central antecedent of partnership capability and both constructs contribute independently to partnership

performance (Heimeriks & Duysters, 2007) and might enhance partnership success (Draulans et al., 2003). Although partner capability is mainly viewed as an individual firm-level partnership capability, it can also be related to and influenced by behaviours and attitudes of internal individuals or external partners (Heimeriks & Duysters, 2007).

In the context of firms' partnership management, learning mechanisms are organisational attributes such as functions, tools, control and management processes, or even external parties (Heimeriks & Duysters, 2007; Pagano, 2009; Niesten & Jolink, 2015). These capability-building-mechanisms are suitable indicators to identify the partnering commitment of firms and the relevance of the partnership for them.

Routines are repetitive operational activities, such as best practices, which result from learning mechanisms while simultaneously strengthening learning mechanisms over time. In line with Heimeriks and Duysters (2007) and Kale et al. (2002) routines with established practices or activities can be seen in practical terms as the sum of learning mechanisms. Because this study does not follow a longitudinal research design this study cannot offer detailed differentiations related to the interaction between learning mechanisms and routines.

Wang and Rajagopalan (2015) criticise the very early studies on partnership management for not considering that capabilities also depend on the individual stage of the partnership life cycle. A good example is the work of Sluyts et al. (2010) that links the partnership capability construct to the partnership development process in accordance with the specific and individual partnership stages. The study emphasises that partnership capability can be further divided into sub-capabilities along the partnership development process. This makes it necessary to include the partnership development process in the conceptual research framework of the individual partnership capability to adequately identify and differentiate individual learning mechanisms.

The partnership development process

The management and structure of the development of collaborative partnerships is a dynamic and complex element of the firms' innovation process. As mentioned, this is why many partnership management studies have adopted a process perspective (Ring & van der Ven, 1994; Spekman et al., 1996; Das & Teng, 2002) and developed process-oriented step-by-step approaches to include and illustrate the complexity and dependency of managing a partnership life cycle. These processes can all be divided into several different stages with related goals, managing activities and actions, key success drivers, or people-related responsibilities; but most

differ in terms of the number of process stages presented and the classification of related activities.

For example, Hogenhuis et al. (2017) follows the model of Slowinski and Sagal (2010) and simply differentiate between two main stages and four sub-stages such as “Before the partnership (Want & Find)” and “During the partnership (Get & Manage)”. Kale and Singh (2009) share the view that the partnership life cycle consists of three main stages such as Alliance Formation & Partner Selection, Alliance Governance & Design and Post-formation Partnership Management. George and Farris (1999) identified four formative stages (recognition, research, relationship setup and ramp up) and one post-formative stage (Ongoing Management). Finally, the study of Sluyts et al. (2010) structures the partnership life cycle into five stages: strategy, search, creation, operation, and evaluation.

Based on the analysis of several different process models Das and Teng (2002) summarise that many studies do not adequately reflect the dynamic nature and specific characteristics of partnerships, which are specifically influenced by the partnership environment (characteristics of the individual partner firm) and the partnership conditions (characteristics of a partnership at any given moment in the life of the partnership). Including these aspects Das and Teng (2002) present an aggregated and generic partnership process model with three stages, which differ in respect of their defined goals and managing of tasks and activities (See Table 3-1).

Table 3-1: Selection of partnership development process models with related activities (adapted from Das & Teng, 2002)

Authors	Formation Stage	Operation Stage	Outcome Stage
Ring and van de Ven (1994)	▪ Negotiation ▪ Commitment	▪ Execution	▪ Assessment
Spekman et al. (1996)	▪ Anticipation ▪ Engagement ▪ Valuation	▪ Coordination ▪ Investment	▪ Stabilization ▪ Decision
Das and Teng (1997)	▪ Choosing an alliance strategy ▪ Selecting partners ▪ Negotiating ▪ Setting up the alliance	▪ Operation	▪ Evaluation ▪ Modification
Kanter (1994)	▪ Selection and Courtship ▪ Getting engaged ▪ Setting up Housekeeping	▪ Learning to collaborate	▪ Changing within
D'Aunno and Zuckman (1987)	▪ Emergence of a coalition	▪ Transition to a coalition	▪ Maturity ▪ Crossroads
Brouthers et al. (1997)	▪ Selecting mode of operation ▪ Locating partners ▪ Negotiation	▪ Managing the alliance	▪ Evaluating performance

The first stage is the *formation stage* that focuses on the initiation and the setup of the partnership. The second stage is the *operation stage*, which is characterised by execution and learning on a project base in a coalition. The last stage is the *outcome stage*, where results get evaluated and potential modifications are realised.

The partnership development process influences firms' development of a partnership capability (Sluyts et al., 2010; Wang & Rajagopalan, 2015). Omitting this partnership life cycle dimension of the conceptual research framework makes adequate data collection and differentiated data analysis difficult. Consequently, this chosen procedure gives the opportunity to specifically explore firms' startup-oriented partnership capability at the formation stage and ultimately provides a more holistic picture on its development at the beginning of a partnership.

The formation stage as an important phase of the partnership development process

Although the formation stage and its underlying activities play an important role in the partnership development process, research on this part of the process remains widely neglected (Das & He, 2006; Hogenhuis et al., 2017) with one exception: the partner selection procedure and its relation to the partnership performance (Shah & Swaminathan, 2008).

The formation stage is crucial because it sets the early foundation for the whole partnership project and thus the basic condition for the following stages and activities (Das & Teng, 2002). The focus lies primarily on the planning and initiation of the partnership and especially on identifying and selecting suitable partners (Das & Teng, 2002; Guertler & Lindemann, 2016). It represents a challenging trial period (Kelly et al., 2002) to assess the trustworthiness of partners (McKnight et al., 1998), which usually generates a higher level of transaction costs (Parkhe, 1993). Consequently, both parties must be willing to invest in the process itself, to improve the mutual understanding of organisational cultures and goals (Larson, 1991; Blomqvist et al., 2005) among other outcomes.

With regard to the individual partnership capability in the formation phase, the internal planning procedure, which includes business case development and a cost and benefit analysis, is a key activity. Moreover, potential partnerships should generally fit with the firm's corporate strategy and vision, which must be defined previously through a clear partnership strategy (Das & Teng, 1997; Sluyts et al., 2010). As another key activity, suitable partners must be identified and selected, a mode of partnership must be chosen, and the negotiation of formal or informal agreements conducted (Das & Teng, 2002; Kale & Singh, 2009; Sluyts et al., 2010). Once the

partnership is initiated and both partners are ready to collaborate, the operation stage starts, and finally there is an outcome phase: Neither of the last two stages are covered in this study. Having built the theoretical foundation to answer the research question, the following section illustrates the chosen methodology and explains the procedure for case selection, data collection, and data analysis.

3.3 Methodological procedure

3.3.1 Theory-elaboration approach and multiple case study research

The goal of this paper is to explore the learning mechanisms involved in large firms' individual partnership capability to determine the partner-specific partnership capability in terms of startups at the formation stage.

To ensure high standards of qualitative research this study follows all the elaborated aspects and raised questions of the work of Pratt (2009) especially in the "finding better paths" section with focus on methodology clarification, data usage, and the determination of the research strategy (develop new vs. refine existing theory). Taking the individual partnership capability concept as a starting point, theoretical advancements flow from using the *theory-elaboration approach* of Fisher and Aguinis (2017), which has been already applied in strategic management, human resource management, organisational behaviour, and entrepreneurship research.

The authors distinguish theory elaboration from theory generation and theory testing. They define theory elaboration as "the process of conceptualising and executing empirical research using preexisting conceptual ideas or a preliminary model as a basis for developing new theoretical insights by contrasting, specifying, or structuring theoretical constructs and relations to account for and explain empirical observations" (p. 438, 2017). Theory elaboration is also used to improve existing theory to accurately explain new empirical observations. They recommend three implementation approaches (contrasting, construct specification, and structuring) when conducting a theory elaboration study, approaches that further include different elaboration tactics. This current research uses the horizontal contrasting approach in the presented research design and to address the research question because the level of analysis remains constant (partnership capability) but the context (asymmetric partnerships with startups) for comparison varies. The approach should thus improve the logical and/or empirical validity of an existing theory or construct.

To extend existing theory, empirical data based on multiple case studies were collected and analysed. Case studies are a commonly used research approach in the fields of OI (Frishammar et al., 2015), entrepreneurship (van Weele et al., 2017), and asymmetric partnerships (Blomqvist et al., 2005).

Multiple case study research is an adequate approach, "when the same phenomenon is thought to exist in a variety of situations" (Yin, 1981, p. 101). Eisenhardt stated the approach fits "new research areas or research areas for which existing theory seems inadequate" (pp. 548, 1989). Given that especially in the corporate innovation context, partnerships with startups are still a relatively unexplored and multi-faceted phenomenon, multiple case study research seems to be an appropriate approach to analyse the dynamic relationship between both actors and to elaborate on the partnership capability concept.

Although theory elaboration does not have identical inputs and outputs as theory generation (Fisher & Aguinis, 2017), this study still follows the first five steps of the theory building process outlined by Eisenhardt (1989). To ensure a high research standard this work follows the *framework for an investigation of the methodological rigor of case studies* (Gibbert et al., 2008). Therefore, this research has tried to fulfill all four criteria: internal validity (e.g. research framework and theory triangulation), construct validity (e.g. data triangulation and indication / explanation of data collection and analysis), external validity (e.g. cross-case analysis and provision of details on case study context), and reliability (e.g. folder-based case study directory).

3.3.2 Case selection

Eisenhardt and Graebner (2007) emphasise that case selection is an essential and challenging part of the theory building process. To increase the generalisability of case studies, cases can be selected strategically (Flyvbjerg, 2006) on a random or an information-oriented basis. For this study the information-oriented approach was adopted to reflect the maximum possible amount of variation to cover firms from heterogeneous industries.

First, large firms headquartered in Switzerland and Germany were identified (See Appendix 3-1): a choice based on both economies being in the top ten worldwide in terms of innovation (Global Innovation Index 2017). Even though large firms are defined as having at least 500 employees and a minimum of 50 million euros of annual sales (IfM Bonn), this study is focused on firms with a least 1,000 employees to ensure significant size differences (Kalaignanam et al., 2007).

Next, the chosen firms were ranked by employee size and innovation and partnership managers were identified, who have been responsible for the management of startup initiatives, activities, and relationships. Overall, 77 large firms were requested via email to participate in this study. Seventeen innovation and collaboration experts representing 17 firms and covering 13 different industry sectors agreed to participate (See Appendix 3-2). The selected experts worked in departments that had on average been operating for three years. Almost all selected experts had a decade of professional experience and most worked in leading positions. Four of the 17 managers have an entrepreneurial background, because they had previously founded their own companies.

3.3.3 Data collection

After identifying the experts, based on a literature review a semi-structured interview guideline was developed to support the process of answering the defined research question (See Appendix 3-3). The guideline for the experts consisted of three open lead questions. The first two questions focused on the general levels (context and firm description, motivation) and the third question on the main theme and specific level (formation).

The semi-structured interview guideline was then sent to the experts two weeks before the appointment. The guideline for the author and interviewer includes further sub questions, but were not transferred to the experts. These were only used to ensure and answering flow. In total, 17 interviews in German were collected and transcribed. The interviews lasted between 33 and 77 minutes and were primarily conducted by phone and all digitally recorded between August and October 2015. The transcripts capture a total data set of 946 minutes and 146,124 words. The average duration was 56 minutes and per transcript comprise an average of 8,596 words.

The interview excerpts used for this study were translated into English by a professional language editor to safeguard the content and context of the experts' statements.
Moreover, triangulation methods were also applied by supplementing the transcription interview data with news articles using LexisNexis, press releases, annual reports, internal documents, website content, and company event presentations to elicit a holistic picture.

3.3.4 Data analysis

For data analysis, this study followed an iterative process, which originally started with reading every interview several times. Afterwards the recommended coding procedure of Gioia et al., (2012) has been followed. As this work does not follow a pure theory generation but an

elaboration approach that also includes some grounded theory elements (Fisher & Aguinis, 2017), the research framework is set as a starting point for the data. Hereby, the transcribed data were codified separately for every single case study into the four general learning mechanisms (functions, tools, control and management processes, and external parties) using support software MAXQDA.

Based on these codes these were further evaluated and aggregated as in-vivo codes. Depending on these codes the analysis follows one recommended tactic of Eisenhardt (1989) to look for within-group similarities coupled with intergroup differences. Consequently, the author conducted an iterative cross-case analysis across the entire sample and constantly identified and compared all in-vivo codes with the same meaning and grouped the most common content to consolidate them into *1st Order Concepts* and aggregate these concepts into *2nd Order Themes*. In total, about 1,400 codes were generated.

The results of this process are presented in the next chapter and provide a graphic representation of the extracted categories of the four learning mechanisms.

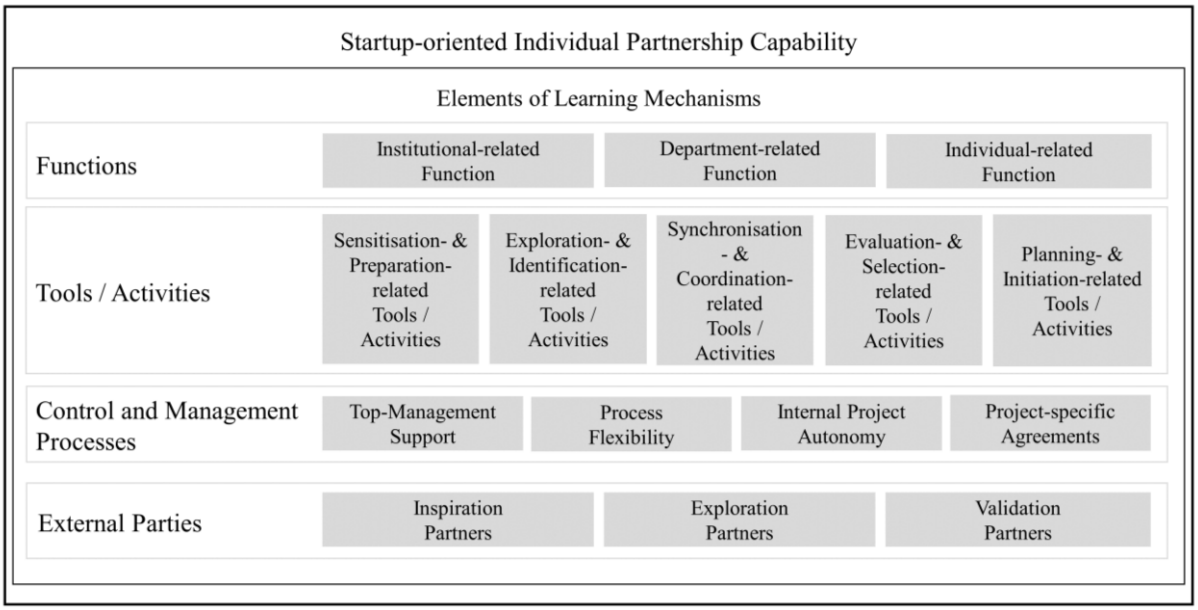
3.4 Results

The results of this qualitative analysis provide empirical evidence that firms are increasingly considering startups as official innovation partners as an integral part of their innovation strategy. Therefore, they rethink, adapt, or develop their partnership functions, tools and activities, control and management processes, and the selection of external partners. Based on these specific partnership capability developments they want to bring themselves into the position to manage asymmetric partnerships effectively at the formation stage.

The case study analysis provides 15 elements of learning mechanisms, which constitute firms' partner-specific partnership capability (here: startup-oriented partnership capability) (See Figure 3-2). These have been extracted based on the partnership capability construct. The new identified learning mechanisms have been not captured in detail by the general partnership capability construct so far.

In the following sections all the identified learning mechanisms will be primarily discussed on the level of 1st Order Concepts and 2nd Order Themes. Selected sample quotes by the interviewed experts are additionally presented for each learning mechanism to strengthen the context and meaning of every individual learning mechanism. The raw data, which include the aggregated in-vivo codes, are presented in the Appendix 3-6, 3-7, 3-8 and 3-9.

Figure 3-2: Large firms' startup-oriented individual partnership capability

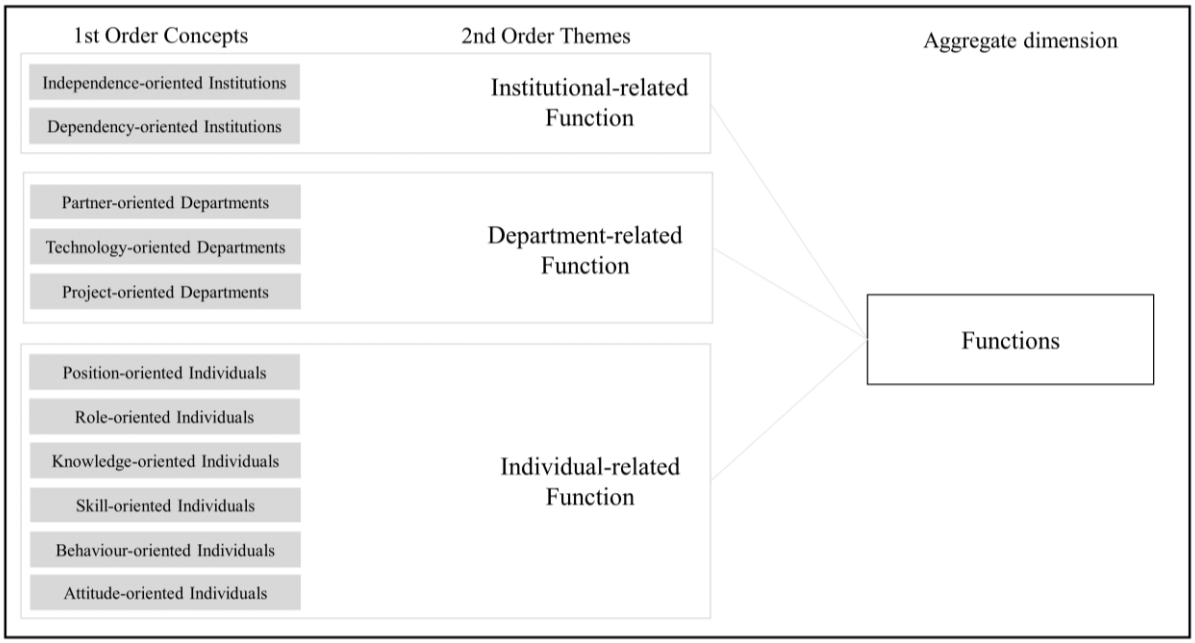


3.4.1 Learning Mechanisms of Partnership Functions

The partnership functions represent the managerial competence to structure and control partnerships within an organisation with external partners. Referring to asymmetric partnerships this function is the organisational anchorage, touch point, and main responsible driver when large firms interact with startup firms.

The results of the case analysis illustrate that different corporate functions realise partnerships with startups. The functions can be sorted into different levels: the *Institutional-related Function*, the *Department-related Function*, and the *Individual-related Function* (See Figure 3-3).

Figure 3-3: Learning Mechanisms of Partnership Functions



The *Institutional-related Function* covers holistic corporate vehicles to support startup firms or to manage startup partnerships and can be further differentiated in terms of their self-image. There are strong independence-oriented institutions, that try to support and control startups relatively independently of the core organisation. Typical vehicles are accelerator or incubator entities, corporate venture capital units, joint ventures, or open startup platforms. On the other hand, there are also dependence-oriented institutions, that primarily solve problems for the internal (core) business units. Without this link and without a clear internal recipient a complete transfer of the collaborative project outcome to the corporate firm would not be easily possible. Therefore, startup projects are realised with specific startup collaboration programs or own startup hubs. A manager of a large firm explains why his firm chose a dependence-oriented institution:

Well, at the time we looked at various models of how to deal with startups; from the classic corporate VC, through incubation to accelerator topics. I have to be honest and say that for us as a smaller market player and prospective client we just don't have the kind of budget to create let's say 20, 30 startups somehow in-house throughout the year, to assign someone to them as support, we just couldn't do that. […]. On the other hand, we also wanted to deliver results relatively quickly. By results we mean that the end customer can touch, feel, and work with the product. Really, we did actually already have a VC structure, initially determined by finances, and that coincided with the idea of us having to deliver products now to end customers. And that is why we then focused on the subject of establishing fast opportunities for co-operation. (C5)

While the institutional-related function has a kind of exclusive character, there is also the *Department-related Function*, which is based on existing corporate departments—although they differ in terms of their purpose, tasks, and orientation. The department-related functions

are partner-oriented departments (e.g. OI management or partner management), technology-oriented departments (e.g. R&D and technology scouting) and finally more project-oriented departments. Project-oriented departments primarily partner with startups when partner-oriented and technology-oriented departments have already identified suitable startups and matched them to internal use cases. Specifically, they include the business units, (the business development and product development departments) and even support units (such as human resources). A manager of a large firm explains the focus of the innovation department she is responsible for:

There were what you could call OI approaches in the past, but with more of a focus on the college and the university. What we did back then was much more a case of sponsoring professorships, sponsoring professors, initiating a few ideas competitions but I was not active at that point, well I was not active in the team at that point. It was about two and a half years ago that I was made responsible for the organisation, development and innovation, and was tasked with setting up a system of working with startups etc. (C11)

The third function is anchored based on the responsible internal employees—the individual level of an organisation. Six *Individual-related Functions* are differentiated: position-oriented individuals, role-oriented individuals, knowledge-oriented individuals, skill-oriented individuals, behaviour-oriented individuals, and attitude-oriented individuals.

The particular position of individuals is usually allocated by the organisation or the specific department. Typically positions that interact with startups in the formation phase are business developers, top-management assistants, controller, innovation managers, employees of the business units and especially the leading executives of the institutions or corporate departments (e.g. managing partner of accelerator, managing partner of startup platform, head of startup relations, head of (open) innovation management, head of partnerships, head of business development).

The results of this case study analysis illustrate that a position title would not adequately describe the range of responsibilities of an individual in terms of startup interaction. In the formation stage they take a high number of roles simultaneously to manage asymmetric partnerships. The roles accord with those of mentors, coaches, intermediaries, facilitators, coordinators, intrapreneurs, project managers, lobbyists, business explorers, communicators, idea providers, problem solver, validator and many more.

What the individuals characterise are their knowledge-base in technology, entrepreneurship and startups, methods and tools, innovation management, venture capital, and especially a heterogenic knowledge in as many disciplines as possible.

Their skills include networking, working on own initiative, communication, and adaptability and their behaviour by openness, proactivity, pragmatism, respectfulness, “Give-First”

Mentality and skills in persuasion. Finally, their attitude is marked by trustworthiness, an entrepreneurial mindset, motivation, empathy, and enthusiasm. A manager summarises the characteristics of the individuals in her team as follows:

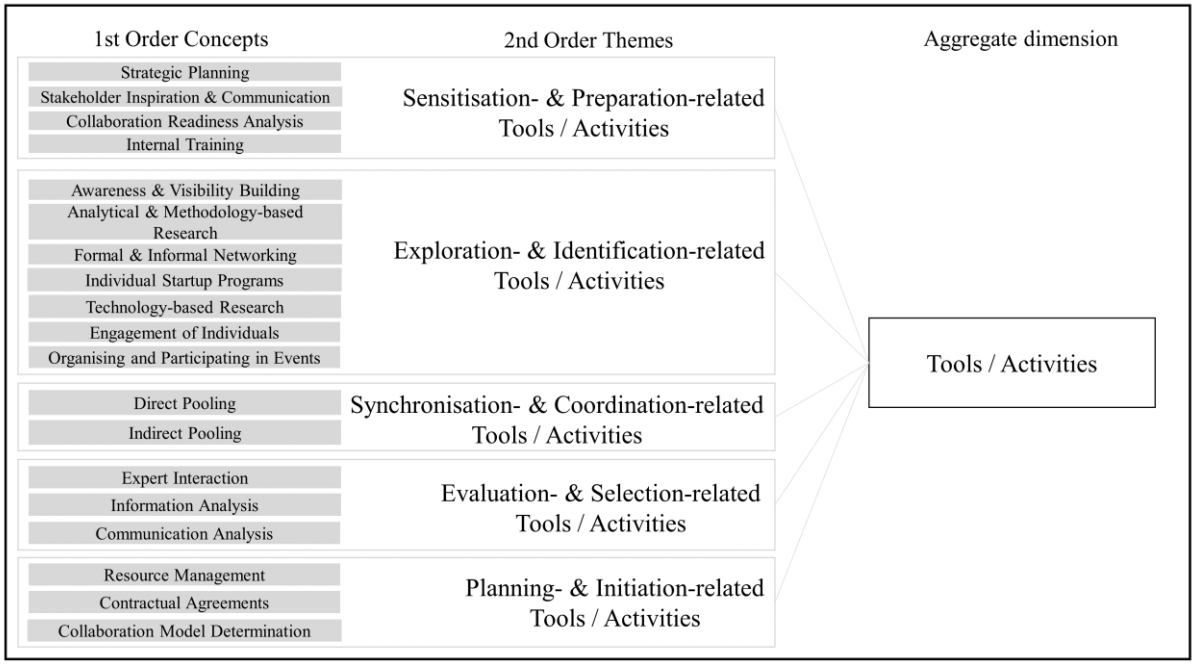
Well, I suppose what I find important is that people can put themselves in the position of a startup. I have a few startup founders in my team, and I selected quite a lot of the people, or to put it another way most of the people, in my team to effectively act like a startup. They do not see limits just because somebody in the company says that something is not possible; they find a new way instead. I think they all think similarly and since I have such a good mix, also of people who have founded a company themselves, they also naturally have a greater understanding of the problems and requirements for a startup to be successful. And then I also have people who know the company well which means I also have some who can then network within the company. I was new when I came here twenty months ago, so I wasn't really 'au fait' with the situation; how could I actually leverage these assets. So, we need a good mix of outsiders and insiders in this kind of new team, but generally speaking they have to be people who believe that the sky is the limit. Then we struggle along together and really want to help, yes. (C15)

3.4.2 Learning Mechanisms of Partnership Tools and Activities

The partnership tools and activities are a many-sided dimension of the partnership capability construct and necessary to operationally support and practically realise partnerships along the partnership development process.

At the formation stage the tool and activity categories: *Sensitisation & Preparation*, *Exploration & Identification*, *Synchronisation & Coordination*, *Evaluation & Selection* and *Planning & Initiation* (See Figure 3-4) have been classified.

Figure 3-4: Learning Mechanisms of Partnership Tools and Activities



The first tool category, *Sensitisation & Preparation* includes four tools and activities that qualify the organisation to prepare for asymmetric partnerships in time. The four tools used by

large firms are strategic planning, stakeholder inspiration, collaboration readiness analysis, and internal training. These are used to set the scope and the guidelines to actually becoming able to collaborate as an organisation. Therefore, search fields are defined, and a situation analysis is undertaken to ensure a clear focus on the organisations' future path. Moreover, working with startups demand stakeholder inspiration and communication to realise forward-looking ramp-up activities such as implementing internal ambassador circles, conducting interviews, or providing market reports. The ultimate goal is to create a forward-looking and proactive balance within the organisation to come into a position to enter asymmetric partnerships. The following quote by a manager expresses why and how his organisation prepares for asymmetric partnerships:

You have to understand, first of all, that startups don't just have needs; they also have fears. And then you have to make sure that you set yourself up internally, so you can combat those fears. And, yes, you start off with the internal sensitisation or preparation, you make the employees familiar with what the fears of a startup could be. That you react relatively quickly to inquiries, that you don't start demanding confidential information and things, which in fact companies often do. (C13)

An (internal) collaboration readiness analysis ensures that all requirements are set to finally find and attract the appropriate startup firms. This might include tools such as a target group analysis and benchmarking of internal processes to evaluate their startup friendliness. Furthermore, an asset and competence analysis determined what collaboration assets and resources can be provided and potentially transferred to startup firms. Finally, employees receive internal training through workshops, learning tours and expeditions, or conferences to promote familiarity with the startup scene and the Dos and Don'ts when it comes to specific startup partnerships.

The second tool category *Exploration & Identification* provides seven tools and activities, which are predominantly aligned to search and find startups. To address suitable startup firms, large organisations try to become visible within the heterogenic startup ecosystems. In doing so, they want to be perceived as an attractive innovation-oriented brand. They make use of awareness-building tools such as social media, speaker engagement at events, newsletters, target-group-oriented landing pages, event sponsoring, and generally signaling their existing reputation.

Nevertheless, a more systematic and analytical way is the application of methodology-based research tools. Potential startups are scouted based on technology mapping, cluster analysis, or specific outsourcing firms that regularly provide selected shortlists to large corporate firms.
The third tool is formal and informal networking. Startup firms can be easily explored via the internal corporate-wide network, because a direct access already exists. In addition, this type of

network is enriched by networks of individual employees to other individuals outside the corporate firm. Large firms are usually well-connected to other large organisations through specific innovation associations or other external and open working groups. Based on this intense knowledge, exchange individual contact details of startup firms can be rapidly transferred.

Another exploration and identification-related tool is the implementation of individual startup programs to create a pull mechanism for the corporate firm and provide incentives for the startup firms. When they organise startup accelerators, startup co-creation programs, or startup awards, corporate organisations build a large funnel and a sustainable pipeline for startup firms. Other corporate tools are based on technology-supportive research, which uses innovative technologies to identify new firms by using intelligent search tools, simple internet research, virtual fairs, virtual expert groups on social media networks, and intermediary platforms or online tenders. A manager explains how search tools can be used to identify startups:

Yes, we also use these search tools to screen all the kick-starters and indiegogos, or whatever they are all called, so we naturally look at all these things regularly and we have a certain search routine in place with specific keywords that regularly finds us things that are particularly interesting. When we search without too many specifics, when we search simply, or at least there are specifics but not in relation to a project, but where we simply say wow, there are 2-3 interesting people in this area that we really want to contact or something like that, that comes under the heading of a business opportunity field. We basically have specific routines running in the background that are always presenting us with information on potential partners. (C14)

Another more unconventional and private way to explore startups is through the proactive engagement of individuals, such as the CEO, other top-management executives, or the corporate shareholders and firm owners. They stand out of the corporate group and act as human touchpoints, which makes them more visible for startup firms than other people. In addition, firms also benefit from internal local startup scouts or official startup contact persons. Both are responsible for seeking startups or reacting to startup requests. They try to be as close to the startup scene as possible to represent their corporate organisation in person.

Finally, organising and participating in events has become an efficient tool commonly used to identify startups on a more superficial but very personal level. Large corporate firms have established many different event formats such as pitch challenges for startups but also reverse pitches for the corporate organisations. Other event formats are focused on a relaxed personal dialogue including meetups, dinners, or even specific conferences. Finally, there are also compact and intense event formats such as startup weekends, hackathons, or variants of speed dating that adhere to a specific topic or defined purpose.

The third tool category encompasses those tools and activities designed to promote *Synchronisation and Coordination*. They focus on the pooling of single startup requests, submissions, and contacts within the corporate organisation to systematically track those

interactions. These tools can be differentiated between direct pooling tools and indirect pooling tools. The direct pooling tools include official gateways and accessible externally-oriented platforms, central one stop shops for startups, and standardised submission forms for the most important facts. One manager explains the purpose of direct pooling tools:

I think you certainly need those because otherwise the Group [the corporation] has no way of meeting the startups at the right place. Just as startups do not have the chance to find the right points in the Group, because that is actually the main problem for outsiders, just how completely non-transparent a Group's structure is, which positions could be interested in which startups. And you can only handle that if you create a position within the Group which is more or less a central contact point which can then distribute these inquires accordingly. Yes. And it will only work if it is someone who knows the Group and who has the relevant standing within the Group. You cannot give a trainee this kind of position, somebody who just hands on ideas, because nobody would take them seriously. (C3)

Indirect pooling tools support the coordination of startup firms within large corporate firms by using internal startup lists, internal platforms, and databases and internal knowledge exchange procedures between the corporate parties.

The three tools of the fourth tool category - *Evaluation & Selection* - focus on analysing and selecting suitable startup firms. Therefore, large firms use tools such as expert interactions, information analysis, and communication analysis to obtain a clear picture of the individual startup firms and to develop a valid evaluation basis for further decision-making.

Expert interaction tools consist of implementing stakeholder juries along the startup selection process and professional external advice. The information analysis tools focus on the structuring, aggregation, and evaluation of available information. Therefore, large firms use checklists with various criteria (See Appendix 3-4). One manager brings out the role of specific partner evaluation criteria to evaluate startup firms properly:

Yes, that is now LoI with us and I had already said that OI is also an evaluation criteria for us that the startups that come should have. I really don't like signing NDAs. And now a startup that insists on an NDA from the beginning is always something of a red rag for me. The really good startups pitch their value proposition wherever they can. They are so convinced of themselves, so convinced of their ability to implement something, that they are sure there is nobody else that could make the product better than them. And the bad startups try to protect their product with NDAs. (C7)

Moreover, other information analysis tools such as business model templates and frameworks, scoring models, business case analysis, desktop research, and pitchdeck analysis explore and collect missing information to finally provide a more holistic picture of the individual startup firm. Based on the information analysis the communication analysis tools such as video conferences, Q&A sessions, introduction pitches, and feedback loops gather further information about the startups and their founders, in case they were not sufficiently captured by the information analysis tools.

The last tool category - *Planning & Initiation* - provides the three tools and activities resource management, contractual agreement, and collaboration model determination to effectively plan and set the conditions to start the collaborative project.

Resource management covers tools such as a firm-specific collaboration assets catalogue (See Appendix 3-5), which illustrates the resources that are provided by the large firm to the startup as complementary assets. In addition, stakeholder coordination is necessary to ensure that most obstacles to the success of the collaborative project are removed in advance. Another planning tool is contractual agreements. Contractual agreements represent the collection of a wide range of formal documents, which can be a non-disclosure agreement, a letter of intent, internal requirement booklets, general terms and conditions, a pilot project contract, and the collaboration project contract. One manager describes how these formal tools are used in terms of asymmetric partnerships with startups:

What we have actually built up over the last four years, on the one hand that we are not held up too much by the more formal processes, but that the co-operation at least has the setup of formal and structural processes. Here's a good example: right at the beginning we somehow only had supplier agreements that were 100 pages long and inside they said that if you delivered a product/software product 10 minutes later than specified, the enterprise would have to pay a fine of 20,000 CHF. That's ok for large suppliers, but for a startup that means it folds after an hour. I would say that we have considerably reduced all these formal aspects. So, what we have now is a paper for various co-operations that is not quite two pages long and is relatively flexible so that we have a certain degree of leeway here. (C7)

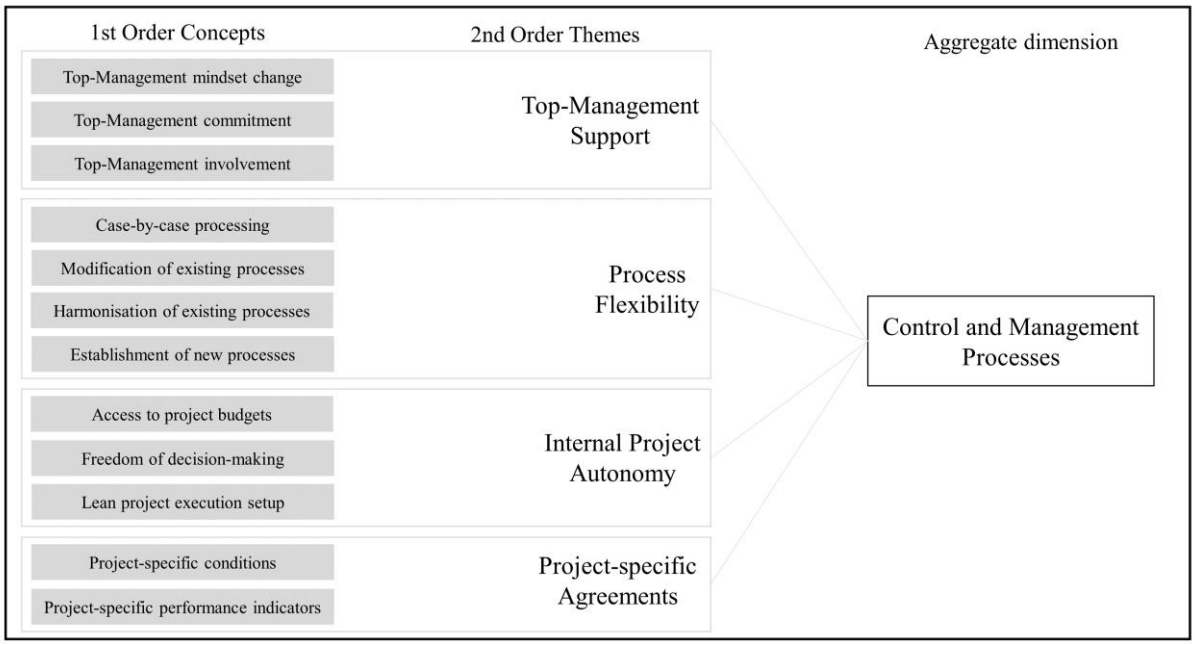
The third tool and activity - Collaboration Model Determination - clarifies the type of partnership type desired; that might be a co-creation project or a buyer-supplier relationship between the large and the startup firm depending upon the situation. Although this study focuses on non-equity-related partnerships, it is worth noting that collaboration models that include minority investment might also be possible at this point.

3.4.3 Learning Mechanisms of Partnership Control and Management Processes

The third dimension of the partnership capability construct is control and management processes. These contiguous and supportive processes ensure that collaborative projects can be professionally managed within large organisations without getting out of control structurally and economically.

The case study analysis identified four control processes and learning mechanisms. These are *Top-Management Support*, *Process Flexibility*, *Internal Project Autonomy*, and *Project-specific Agreements* (See Figure 3-5), which are applied when large firms are willing to manage asymmetric partnerships at the formation stage.

Figure 3-5: Learning Mechanisms of Control and Management Processes



The analysis revealed the *Top-Management Support* consists of three components and is equal to the level of understanding of startups held by the top management and the degree of endorsement of startup-related activities.

The first component is the ongoing mindset change of top-managers in terms of startup firms. Top-managers have increasingly realised that being more innovative and acting more customer-centric makes startups at least an important partner if not a competitor. The quote below by a manager underlines this aspect:

I do think the perception of startups has changed. In the sense that now there is not as much persuasion work needed internally to present startups as a respectable partner. And that we don't just think of a startup as an Internet place with team members doing their work with a take-away pizza in front of them, to use a cliché. But that we now also say, yes, they might be new, yes, they can be financed as Venture Capital, but this could still result in a very respectable, profitable partnership. It is certainly easier than it was six years ago. (C6)

The second process is a top-management commitment process to startup initiatives. The cases illustrate that the closeness of startup initiatives and activities to the CEO and the strong commitment of the top-management makes it easier to pursue collaborative projects with startup firms within the organisation. There are even cases where unofficial innovation projects (bootlegging) have been the starting point for systematic startup activities, because members of the top-management have perceived and experienced the direct effects and advantages. This commitment gives the startup-oriented partnership functions the security to pursue startup collaboration projects even in the face of a certain amount of resistance from within the company.

Finally, startup projects that have a potentially high impact for the organisation as a whole or its customers, demand the involvement of the top-management throughout the decision-making process. The more the potential outcome of the partnership could have a noticeable impact on the market, the more top-management involvement is necessary. There are cases, where top-management are an integral part of an innovation council, which decides regularly at different (stage gate) process gates about the continuation of startup specific projects.

Besides top-management commitment another learning mechanism element is the *Process Flexibility*. It supports the operations and specifically defines, prepares, sets up and establishes processual procedures around asymmetric partnership management. Process flexibility arises from the four components case-by-case processing, modification of existing processes, harmonisation of existing processes, and establishment of new processes.

Case-by-case processing means that processes are only developed when really required and when the situation justifies doing so. Because most startup partnership projects are too specific and not comparable, large organisations want to continuously develop and reject new processes. Process flexibility is also the result of the necessity to modify existing processes. There are several examples of existing processes (e.g. legal and procurement types) that have been modified and adapted to the specific needs of startup firms. This situation is outlined by an innovation manager as follows:

Well, I certainly think it is the fact that we are detached from the specialist areas, that we can talk to startups in a different way from the specialist departments that are an integral part of their organisation. That have to adhere to different Group directives from the ones we have to adhere to. In other words, a really important point, something we see as a kind of mission really, is that we don't necessarily have to adhere to internal Group directives. That's really important because it makes us more flexible, also in our reactions to startups. Because we simply don't have the time, when a startup wants to work with us, to say, well, it'll take six months until certain purchasing process, requalification processes etc. have been gone through. Startups need an answer much faster than that otherwise they will have gone and be knocking at the next company's door. That means, although we are currently working on that at the moment and seeing which processes are the ones that will help us in the startup world on the corporate-side which we could perhaps offer the startups as support, such as legal consulting services or something like that and what the other areas are that perhaps slow us down, that effectively make us less attractive for startups in comparison with other industrial partners. (C10)

Moreover, process flexibility is also based on the harmonisation of existing processes and the establishment of new ones. The case study analysis shows that combining existing innovation, project, market, and partnership processes demands a stronger harmonisation of existing processes, which also leads to more open processes, which are targeted at both internal and external innovation partners.

Large firms have also started to establish new processes such as startup screening processes, feedback processes, project transfer processes, and corporate venture capital processes. They are constantly considering how they might gain competitive advantage by creating totally new processes based on startup-friendly services and offerings.

Internal project autonomy has been identified as another learning mechanism and as the third control and management process. It describes the ability of a partnership function to independently manage startup projects as it needs to. *Internal Project Autonomy* is characterised by the three subprocesses: access to pilot budgets, freedom of decision-making, and lean project execution setup.

Because collaboration projects with startups cannot be planned in the long-term, large firms have started to give startup-oriented partnership functions easy and flexible access to specific budgets, which can be used for pilots and test projects. Simultaneously, the partnership functions receive more freedom in decision-making. They can decide independently which collaborative projects should be started/cancelled or which startups can participate in an accelerator program, as long as the impact for the whole firm is manageable.

Finally, partnership functions appreciate the possibility to build a lean project execution setup to rapidly create suitable test and learning environments. These are necessary to enable and realise fast experimentations to finally receive swift feedback, as one manager outlines:

The other aspect, and certainly something that is needed in my opinion, particularly for this validation phase, are simply opportunities to start projects with the startups. If I say to a startup today, "Great product, fantastic, we'll use it" and then development itself takes another three years until it appears in the next car, that is just no use to a startup. Naturally they have to make sure that they produce visible effects on the market or that they can quickly advertise their new co-operation because naturally it sounds better to a VC if you can say, look, I have an ongoing use case here with an OEM, even if it is initially only a pilot project - it can give a startup a considerable push in the right direction. That they can get out of this chicken and egg situation and that, in a way, you can act as a problem solver, we have certainly experienced it before, and for that I simply need, well, possibilities for implementation. In our case, we have our own fleets, our own car-sharing fleets, our own customers, closed user groups and we want to increasingly get into these kinds of tests with them in the future. (C8)

The last and fourth control and management process is labeled *Project-specific Agreements*. This process represents the necessity to develop and define project-specific conditions and project-specific performance indicators for every single startup collaboration project. The analysis of the corporate cases identified several project-specific conditions, including the definition of project goals and the project plan. In addition, project responsibilities include designating responsible contact persons for the customers. Future scenarios are captured in terms of the business model design and the margin distribution between the large and the startup firm. The distribution of contributed resources or payments is also part of the agreement. A manager summarises these aspects in the following quote:

Yes, well on the one hand the whole financial aspect is taken care of, which funding has to come at what point and what corresponding services are behind that funding or what is to be done in a specific phase. Usually a project is divided up into phases and every phase is somehow connected to a specific financial budget, where the startup receives money from us for certain topics and then certain meetings are defined. Then of course the subject of patents is sorted, what belongs to whom. And then of course there are visions, what form does a co-operation take when we have the product, the technology, the business model, how do things look when all of that is in place. And that is also regulated at that level, you might call it a letter of intent or something, that you say, okay, it will turn

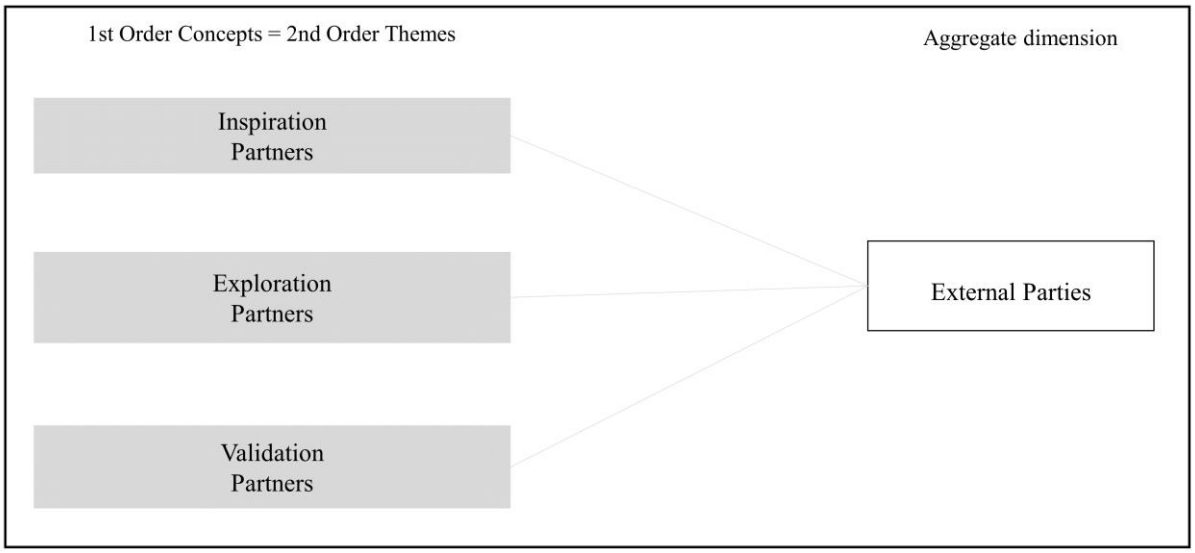
out like this or at least that is how we envisage it. Because at some point you have to provide the startups with a bit of a perspective, how do things progress from here. (C14)

While the project-specific conditions refer more to the scope of the project, project-specific performance indicators control for the collaborative procedure and its potential outcome. These performance indicators cover a wide range of different aspects. They include the extent of profitability, of learning gains, of impact effects on reputation or communication, or simply of customer acceptance and satisfaction. Last, according to the type of project pursued and the individual business case it can be also the number of transactions created, the number of activated users, the number of acquired customers, or the volume of revenue generated.

3.4.4 Learning Mechanisms drawn from External Parties

External parties are the final dimension of the partnership capability construct. These external partners are actors that support corporate firms along their partnership processes and provide specific tasks and services for them. Based on the data three groups of partners within the formation stage are determined. These are *inspiration partners*, *exploration partners* and *validation partners* (See Figure 3-6).

Figure 3-6: Learning Mechanisms drawn from External Parties



Inspiration Partners such as technology firms, trend-scouting firms or simply other large firms provide large firms with new information and ideas to be able to set their strategic scope. New insights reveal large firms interpret and prioritise relevant future topics such as partnerships with startup firms, which also results in a better overview of new technological trends, use cases, or business and innovation opportunities. In addition, inspiration partners support

employees of large firms with specific training sessions and project preparations. One manager puts it in a nutshell:

We simply engage in trend management with various external partners. And what they do for us is really this trend monitoring. They also produce reports, we discuss the reports together, then we try to adapt the various reports for our companies. Then we try to hand on these results or this input internally in an attractive form. So that we can also give our internal stakeholders inspiration. (C11)

Exploration Partners support large firms in identifying startup firms based on their orientation, position, and network. Large firms are interested in finding the most appropriate startup firms worldwide, and accordingly collaborate with a number of heterogenic exploration partners such as universities, serial entrepreneurs, business angels, company builders, conference organisers, operators of accelerator programs, providers of digital platforms, and specific startup screening firms. One manager stresses the role of company builders for his company:

*We prefer working with company builders, for example in Berlin we now work very closely together with ***, they are very big and have various people who are extremely well networked. But on more of an informal, personal basis, and they have done very well so far, and from this network we have found some very, very good candidates. (C7)*

This range shows that when large firms are looking for startups and talents they are willing to enter partnerships with many different actors in an innovation ecosystem to build up their own innovation network.

When evaluating and selecting startup firms, large firms collaborate with *Validation Partners* such as venture capital firms, university professors, and legal firms because of their expertise and experience. These partners act as a sparring partner and support large firms to make profound decisions to select the most appropriate startup firms. Consequently, one manager summarises:

No, that is something that we in the selection team decide. My team also has partnerships with venture capital companies who are members of the selection committee and we select, in other words we evaluate using various criteria and then see who ends up on top, and then discuss it again. (C3)

3.5 Discussion

3.5.1 Contribution to theory

The goal of this theory-elaboration approach combined with multiple case study research was to explore how large corporate firms develop a startup-oriented partnership capability at the formation stage. The existing partnership capability construct and the partnership development process made it possible to identify 15 elements of learning mechanisms. These learning mechanisms illustrate that large firms are willing to prepare for asymmetric partnerships and make efforts to pave the way for an effective asymmetric partnership management.

Comparing this study's results with the generic learning mechanisms presented by Heimeriks and Duysters (2007) illustrates some differences. While Heimeriks and Duysters (2007) target most partnership functions toward departments (e.g. partnership department) or positions (e.g. vice-president of partnerships, partnership specialist, or local partnership manager) this study demonstrates the existence of many different functions within a corporate firm that interact and collaborate with startup firms. Interestingly case study data also demonstrates that exclusive partnership departments or partnership managers only rarely exist in selected large corporate firms. Instead departments and managers from the innovation, technology, or business fields who manage asymmetric partnerships are the norm. While the overlap within the tool dimensions are predominantly similar to the identified tools of this study, this does not apply to the dimension of external parties. While Heimeriks and Duysters (2007) identified four different external parties, the data show over twenty different parties, which demonstrate the complex structure of startup networks and innovation ecosystems. With regard to the dimension of control and management processes, no information was found in the case data relating to rewards and bonuses for managers or to country-specific partnership policies. Nevertheless, the results demonstrate that the top-management renounced too much control and granted managers license to act more independently unless the collaboration impacts the whole firm.

Consequently, the results of this study contribute new insights for entrepreneurship, CE, OI, and partnership theory. Those results have specific implications for the existing literature as the following three aspects illustrate.

First, a holistic two-dimensional conceptual research framework was developed for this study. It was applied based on the combination of the (individual) partnership capability development process and the partnership development process. Consequently, this study fulfills the demands of previous studies to conduct precise research on partnerships. While many partnership studies do not specify the partnership stage they analyse, this study focuses exclusively on the formation stage of the partnership development process. That applies also to studies using partnership capability theory, many of which tend to generalise their findings and omit to consider the type of partnership capabilities (individual vs. portfolio), the individual stages, and associated differences within the partnership development process. Therefore, this study provides fine-grained information and detailed knowledge on large firms' learning mechanisms of the four partnership capability dimensions Functions, Tools/Activities, Management Processes, and External Parties at the formation stage. Furthermore, the results offer a view of firms' microprocesses applied to develop different partnership capabilities along the

partnership development process. Consequently, the study's results support the findings and arguments of Niesten and Jolink (2015) and Wang and Rajagopalan (2015), who emphasise that the still under-researched theory of the partnership capability concept must provide "in-depth insight into the microprocesses and practices" (Kohtamäki et al., 2018, p. 198) within the dynamic capability environment (Vogel & Guettel, 2013).

Second, by applying the conceptual research framework to the asymmetric partnership context the study illustrates how large corporate firms manage their partnerships with small and young startup firms. Specifically, this current research fosters asymmetric partnership management research by taking a perspective of non-equity-related partnerships rather than a more common equity-related perspective. Because many studies are restricted to buyer-supplier relationships, the results give interesting insights into corporates' collaborative behaviour and their relationships with the smaller partner. The widespread discussion in the literature about the *learning race* according to technologies (Alvarez & Barney, 2001) or the often-outlined David-Goliath situation (Katila et al., 2008; Diestre & Rajagopalan, 2012; Vandaie & Zaheer, 2014; Hora et al., 2018) might be discussed on a new level in the future. This simply is because competition in global innovation markets has dramatically changed the demand for new (digital) technologies, new scalable business models, and access to entrepreneurial talents. Today, large firms tend to evaluate and prioritise time to market or access to customers higher than developing or selling a technology or product alone, especially when it comes to (digital) service or business model innovation. Therefore, large firms are willing to adapt their structures, methods, and processes and trying to make their partner management more symmetric to proactively overcome barriers resulting from asymmetries and thus to effectively leverage the full innovation and collaboration potential with startups.

Finally, using a theory-elaboration approach within an asymmetric partnership context allows this study to identify 15 specific learning mechanisms, that constitute large firms' partner-specific partnership capabilities. These findings demonstrate that focusing on individual partnership capabilities alone is not sufficient when partnerships with external innovation partners such as startups are chosen. Therefore, partner-specific capabilities, and especially in this study startup-oriented partnership capabilities, must be seen and treated as an enhancement of the individual partnership capability in particular. These results are in line with the work of Niesten and Jolink (2015) and especially with Zaremba et al., (2017), which both demand a stronger focus on capabilities oriented at the characteristics of the individual innovation partner, such as new and young startups. Consequently, this construct should be considered in studies

that analyse the relationship between partnership capabilities of a firm and performance effects of OI projects.

3.5.2 Implications for practice

This work provides points of reference and practical guidelines especially for innovation managers or partner managers of large corporate firms who are considering intensifying collaboration projects with startup firms. The multiple case study data and the study's results supply detailed information that might improve the orientation for large firms and support their knowledge on startups as possible innovation partners. There are at least four key aspects that firms and managers should take note of.

First, large firms should review and rethink their existing innovation activities and innovation-partnerships with regard to their innovation goals and their resource management. This implies changing existing strategies, structures, and processes to develop a unique individual partnership capability to use this capability to gain strategic advantage in the market. These changes should be sustainable and thoroughly planned and prepared.

Second, firms must also realise that they should adopt a systematic approach to identifying, evaluating, and selecting the most suitable and valuable startups with innovative potential. Instead of hiding behind brand, market position, or tradition, they should become proactively visible to attract and convince startups. Particularly worthy of emphasis are criteria-based startup partner evaluation checklists (See Appendix 3-4), which offers managers an easy support tool to evaluate a startup firm during the selection process.

Third, if firms decide to actively partner with startups, they should ask themselves before entering the first partnership why specifically should a startup work with their organisation. Consequently, it is necessary to be willing to learn and understand the specific needs and requirements of startups and their natural limitations in terms of resources, reputation and their limited knowledge about partnership management. Therefore, in order to be competitive, firms must also be prepared for the execution of a project and should think creatively about benefits and complementary collaboration assets they might offer startups other than money alone. Therefore, this study provides an example of an asset catalogue, which might help firms to identify and activate complementary resources within their firm (See Appendix 3-5). Adopting such an approach can offer an advantage in the "war for entrepreneurial talents" to become an innovation partner of choice.

Fourth, large firms and their managers must meet startups on an equal level at all points and must be open to learn and to doing things differently. An attitude of respect is crucial, especially when the outcome of collaborative projects should meet the internal expectations of a large firm. This equal level can be viewed from a trust, communication, but also a technical perspective. In times of digital transformation many large firms oversee or underestimate the strategic role of (open) technical interfaces to data, products, or to customers, which are the future conditions to provide additional and collaborative value to digital customers.

3.6 Conclusion

3.6.1 Limitations

This article does not claim to be an exclusive or complete study. Limitations are inevitable especially given the variety and dynamic of dependencies between innovation types, partnership types, startup characteristics, and individual innovation goals. Consequently, this paper must be understood as an initial overview of non-equity-related asymmetric partnership from a large-firm perspective; one that sheds light on large firms' learning mechanisms employed to develop a startup-oriented partnership capability; and that outlines several other starting points for further research in the field of asymmetric partnership management. The exclusive focus on the large corporate perspective is rare in prior research; but it necessarily neglects the view of startup firms or other external actors, such as consultants or executives of startup hubs. Moreover, this study only considers the situation and perspective of German and Swiss firms, and so cannot claim to reflect a European or global perspective. Furthermore, the study adopts a broad cross-industry approach rather than a deep firm or specific industry sector approach to include various extreme characteristics.

3.6.2 Future research

The results raise several questions worthy of discussion in future research. The still unexplored field of asymmetric partnership management in general and large firms' partnership capability in particular offers research opportunities especially if using quantitative analysis. Such analysis might be conducted from a combination of various dimensions (e.g. a focus on the formation or outcome process stage, or on a specific partnership activity, or on the startup by taking a firm-level or an individual level perspective). Furthermore, its approach could also vary in terms of the number of innovation partners included by focusing on startups in direct comparison to other external innovation partners such as universities or consulting firms. One

other neglected topic is the empirical examination of a matching score or partner fit for asymmetric partnerships. While Alvarez and Barney (2001) find that 80% of entrepreneurial firms felt unfairly treated by large firms; a finding that suggests a key problem is the inability of large corporations to build trustworthiness with startups and their entrepreneurs. Collecting and analysing partner decision criteria from both partners' perspectives in combination with the willingness to enter partnerships depending on startup manager's or founder's behaviour, attitude or character could also provide further interesting insights.

As already mentioned, research on large firms' partnership capability provides further opportunities, because existing studies have only brushed the surface (Kohtamäki et al., 2018; Wang & Rajagopalan, 2015). This applies equally to an individual partnership capability of startup firms (Paradkar et al., 2015; Usman & Vanhaverbeke, 2017) willing to enter partnerships with large companies to enhance innovation and explore scalability. While this study has focused on firms' individual partnership capabilities (with a focus on external asymmetric partners) the same research potential can be seen in portfolio partnership capabilities (with a focus on several asymmetric partners) where more studies can be expected. Large firms are potentially faced with a trade-off situation between following primarily dyadic and individual startup partnerships or investing into their portfolio capabilities realised through standardised innovation vehicles such as individual corporate accelerators (Kohler, 2016; Kanbach & Stubner 2016; Pauwels et al., 2016; Kupp et al., 2017; Battistella et al., 2017), (open) incubators (Becker & Gassmann, 2006; Eveleens et al., 2017) or multi-corporate accelerators to profit from startup cohorts, which demands similar characteristics (e.g. technology focus, sector focus, customer focus, etc.). The list of avenues for further research above constitutes only a small selection of issues that could be explored further.

Appendix

Appendix 3-1: Descriptive list of selected case studies

Case	Industry*	Firm size category as FTE** in 2016	Firm size category (revenues in € m) in 2016	Headquarter	Information on ownership	Organisational anchor for startup-related activities (Specific department name)	Existence of Department in years	Size of department as FTE	Reporting to
C1	Insurance Carriers	1,000 – 10,000	10,000 – 50,000	Switzerland	Public Company	Innovation Management	4	7	Member of the Board (Marketing)
C2	Technical Services	1,000 – 10,000	< 1,000	Germany	Public Company	Startup Platform***	4	6	Member of the Board (CEO)
C3	Broadcasting	1,000 – 10,000	1,000 – 10,000	Germany	Public Company	Startup Accelerator***	3	5	Member of the Board (Investment and M&A)
C4	Machinery Manufacturing	10,000 – 50,000	1,000 – 10,000	Germany	Private company	Research & Development (Technology Development)	n/a	130 (30)	Member of the Board (R&D)
C5	Rail Transportation	10,000– 50,000	1,000 – 10,000	Switzerland	Government linked company	Innovation (Business Development & Startup Relations)	3	n/a (10)	Member of the Board (B2C)
C6	Real Estate	1,000 – 10,000	1,000 – 10,000	Germany	Public Company	Product Management (Business Development)	2	32 (1)	Member of the Board (COO)
C7	Telecommunications	10,000 – 50,000	10,000 – 50,000	Switzerland	Public Company	Innovation (New Business and Innovation)	4	65 (10)	Member of the Board (B2C)
C8	Transportation Equipment Manufacturing	50,000 – 100,000	50,000 – 100,000	Germany	Public Company	Business Innovation (Partner Management and Business Models) ***	3,5	70 (1)	Member of the Board (Sales)
C9	Transportation Equipment Manufacturing	>100,000	> 100,000	Germany	Public Company	Business Innovation	7	20	Member of the Board (R&D)
C10	Utilities	10,000 – 50,000	10,000 – 50,000	Germany	Public Company	Corporate Innovation Management	1,5	11	Member of the Board (CEO)
C11	Credit Intermediation and Related Activities	50,000 – 100,000	1,000 – 10,000	Switzerland	Government linked company	Development and Innovation (OI)	2	50 (5)	Member of the Board (CEO)
C12	Credit Intermediation and Related Activities	50,000 – 100,000	1,000 – 10,000	Germany	Public Company	Business Consulting (Future Lab)	4	100 (1)	Head of Direct Banking
C13	Chemical Manufacturing	10,000 – 50,000	1,000 – 10,000	Switzerland	Public Company	Technology & Innovation Office (OI)	2	10 (2)	Member of the Board (CTO)
C14	Chemical Manufacturing	10,000 – 50,000	1,000 – 10,000	Germany	Public Company	Technology Scouting (Cross-Industry Scouting)	2,5	40 (n/a)	Director R&D
C15	Food and Beverage Stores	>100,000	50,000 – 100,000	Germany	Public Company	Business Innovation	1,5	21	Member of the Board (CEO)
C16	Motor Vehicle and Parts Dealers	50,000 – 100,000	10,000 – 50,000	Germany	Foundation held company	Thinktank***	1	n/a	Member of the Board (CEO)
C17	Machinery Manufacturing	10,000 – 50,000	1,000 – 10,000	Switzerland	Public Company	Research & Development (New Technologies)	n/a	n/a (12)	Member of the Board (CTO)

* Categorisation is based on the North American Industry Classification System (NAICS); ** Full-Time Employee (FTE); *** Legal entity wholly owned by parent company

Appendix 3-2: Descriptive list of surveyed experts and interview data

Case	Expert Role	Gender	Years of experience	Degree	Field of study	Experience as a startup founder	Date of interview	Interview Location	Duration of Interview (in minutes)	Length of transcript (in words)
C1	Head of Open Innovation	Female	17	Masters	Humanities-oriented	no	2015-08-11	Phone	65	9.980
C2	Managing Director	Male	4	Masters	Business-oriented	no	2015-09-18	Phone	53	9.440
C3	Managing Director	Male	12	PhD	Business-oriented	yes	2015-09-24	Phone	33	5.390
C4	Head of Future Technology	Male	25	PhD	Technical-oriented	no	2015-09-23	Phone	62	8.937
C5	Head of Business Development & Startup Relations	Male	10	Masters	Media-oriented	yes	2015-09-15	Phone	77	11.754
C6	Head of Business Development	Male	14	Masters	Technical-oriented	no	2015-09-21	Phone	44	5.987
C7	Head of Innovation Hub	Male	12	Masters	Business-oriented	yes	2015-10-27	Phone	61	9.208
C8	Head of Partnerships and New Business Models	Male	12	Diploma	Technical-oriented	no	2015-10-20	Phone	57	8.841
C9	Senior Manager	Male	33	Diploma	Business-oriented	no	2015-09-11	Stuttgart, Germany	66	11.840
C10	Manager	Female	6	Diploma	Technical-oriented	no	2015-08-12	Phone	64	10.797
C11	Head of Open Innovation	Male	11	Masters	Business-oriented	no	2015-09-25	Phone	64	8.239
C12	Senior Manager / Head of Future Lab	Male	10	Diploma	Business-oriented	no	2015-10-29	Phone	43	7.706
C13	Head of Open Innovation	Male	3	Masters	Business-oriented	no	2015-08-14	Stuttgart, Germany	74	9.699
C14	Chief Scientist Technology Scouting - Cross Industry	Male	23	PhD	Natural sciences-oriented	no	2015-10-06	Phone	67	10.728
C15	Director Business Innovation	Female	20	Diploma	Technical-oriented	no	2015-10-29	Phone	34	5.919
C16	Managing Director	Female	10	PhD	Technical-oriented	yes	2015-10-19	Phone	38	6.286
C17	Head of New Technologies	Male	8	PhD	Technical-oriented	no	2015-10-20	Phone	44	5.373

Appendix 3-3: Interview guideline

Description of the context and firm

Before we really get into the interview, could you just explain your personal task in the organisation and describe your professional background/qualification?

- Which areas and responsible positions within your organisation are geared toward "OI" and how do these interact with each other (e.g. innovation management, co-operation management, corporate development, M&A, innovation vehicles such as accelerators/incubators)?
- What are the "touchpoints" for startups in your organisation?

Motivation

Why do you see startups as being innovation partners and what are the basic organisational, structural, and individual prerequisites for actually being able to engage in a collaborative project with a startup?

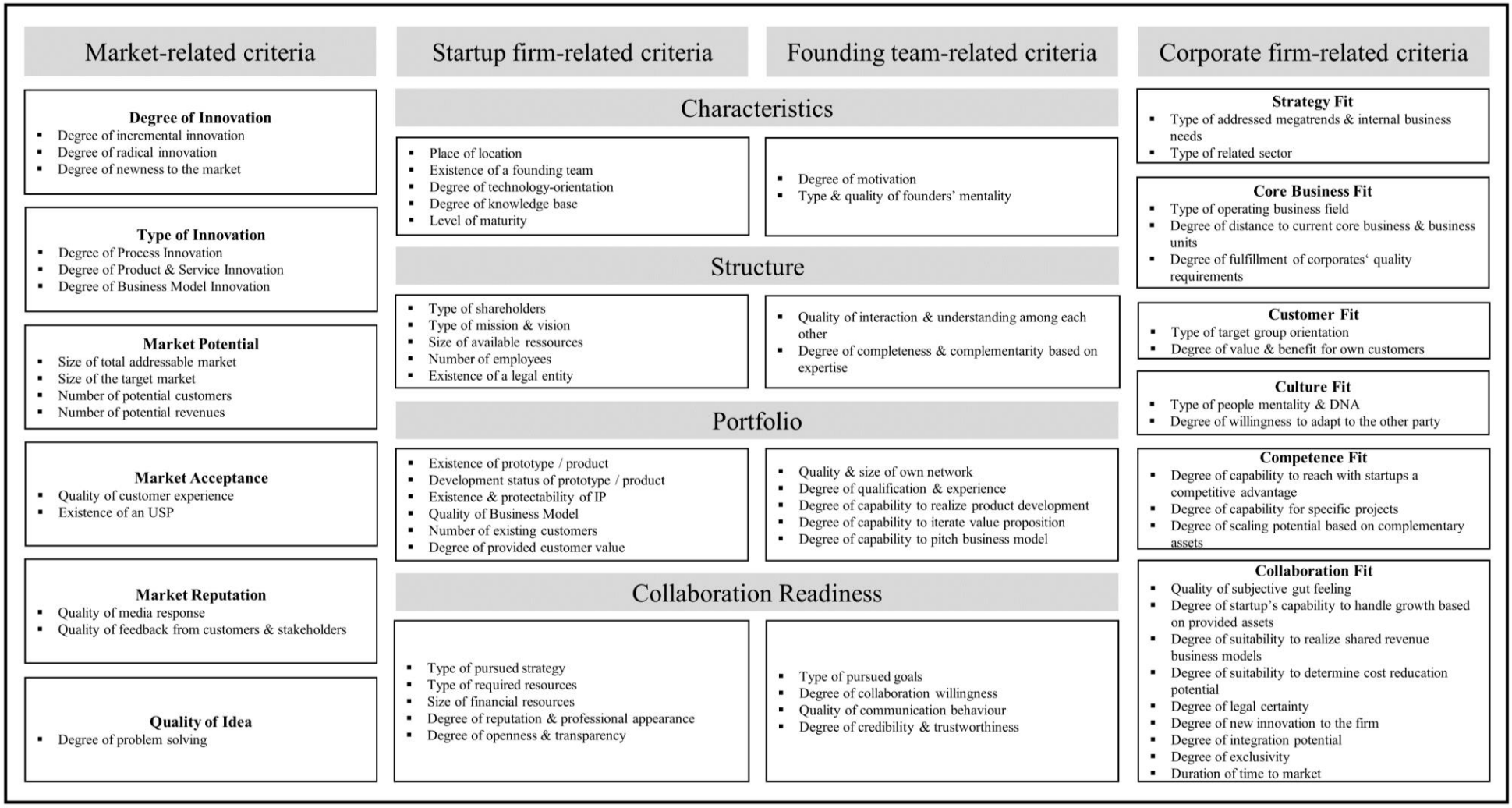
- Since when have you seen and why do you see startups as being relevant (external) innovation partners? If you do/don't, what are the specific reasons for this?
- How do you create basic organisational, structural, and individual prerequisites to actually be able to engage in a co-operation with a startup?
- To what extent is a co-operation with startups different from a co-operation with other innovation partners and your individual orientation? What impact does this have on your organisation/department?
- In which areas do you explicitly see innovation potential for your company in a co-operation with a startup?
- How could you characterise co-operations with startups and categorise them in comparison to other co-operations?

Formation

How do you get in touch with startups and what do you pay particular attention to when contacting, identifying, selecting and deciding on startups as innovation partners?

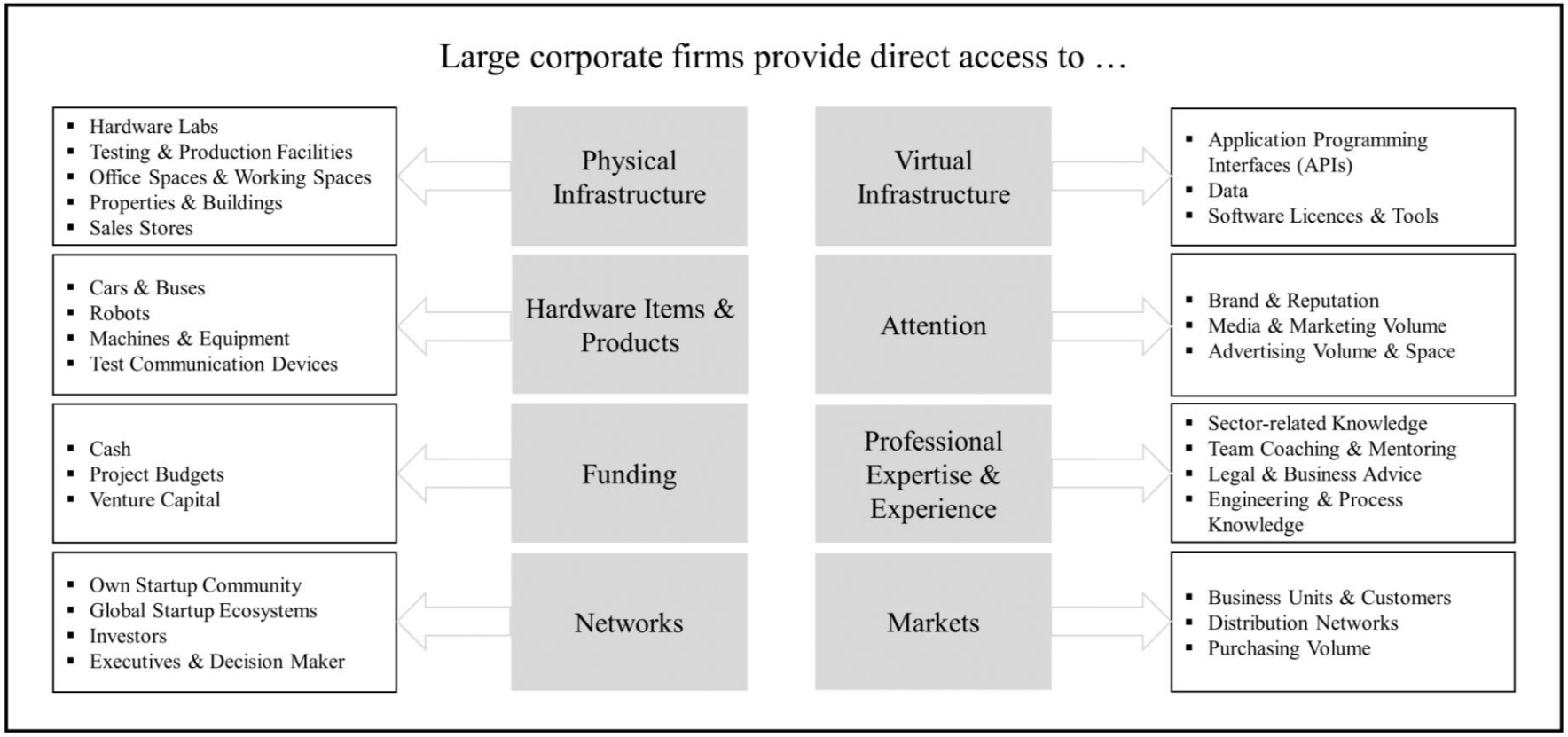
- What specific measures do you employ to identify and contact startups?
- What organisation is needed to achieve this?
- What incentives do you create to be noticed more by startups?
- To what extent do you carry out a pre-selection of startups you want to look at more closely before a co-operation actually takes place?
- What fundamental criteria do startups have to fulfill to be seen as a suitable innovation partner?
- What exclusion criteria are there?
- How different are the selection criteria in comparison to those used for other innovation partners?
- Which organisational level and which people are involved in considering and deciding on a co-operation with a startup?
- What are the most common factors that make you decide to co-operate with a particular startup?
- Which people from your organisation are involved in these decisions?
- What procedure is used to produce a co-operation agreement? Do negotiations genuinely take place on a level playing field?

Appendix 3-4: Structured overview of large firms' startup partner evaluation criteria*



*Criteria are based on case study data

Appendix 3-5: Structured overview of large firms' collaboration assets*



*Collaboration assets are based on case study data

Appendix 3-6: Learning Mechanisms of Partnership Functions (with in-vivo codes)

In-vivo codes	*1st Order Concepts & 2nd Order Themes*		*Aggregate dimensions*
▪ *Accelerator & Incubator Unit*	Independence-oriented Institutions	Institutional-related Function	Functions
▪ *Joint Ventures*			
▪ *Corporate Venture Capital Unit*			
▪ *Holding Company*			
▪ *Lab*			
▪ *Platform / Ecosystem*			
▪ *Collaboration Program*	Dependency-oriented Institutions		
▪ *Innovation Hub*			
▪ *(Open) Innovation Management*	Partner-oriented Departments	Department-related Function	
▪ *Partner Management*			
▪ *Research & Development*	Technology-oriented Departments		
▪ *Technology Scouting*			
▪ *Business & Product Development*	Project-oriented Departments		
▪ *Support Units*			
▪ *Business Units*			
▪ *Business Developer*	Position-oriented Individuals	Individual-related Function	
▪ *Top Management Assistant*			
▪ *Controller*			
▪ *Executive (Head of Startup Relations, Head of Innovation Management, OI, Head of Business Development, Head of Partnerships)*			
▪ *Innovation Manager*			
▪ *Employee of Business Unit*			
▪ *Validator*	*Role-oriented Individuals*		
▪ *Communicator*			
▪ *Business Explorer*			
▪ *Decision-Maker*			
▪ *Lobbyists*			
▪ *Connector*			
▪ *Innovation Champion and Project Sponsor*			
▪ *Project Manager*			
▪ *Strategy Developer*			
▪ *Screener & Scout*			
▪ *Mentor*			
▪ *Coach*			
▪ *Intermediary*			
▪ *Coordinator*			
▪ *Facilitator*			
▪ *Idea Provider*			
▪ *Intrapreneur*			
▪ *Knowledge in Technology*	*Knowledge-oriented Individuals*		
▪ *Knowledge in Startups & Entrepreneurship*			
▪ *Knowledge in Innovation Management*			
▪ *Knowledge in Methods and Tools*			
▪ *Knowledge in Venture Capital*			
▪ *Knowledge in different disciplines*			
▪ *Adaptability Skills*	*Skill-oriented Individuals*		
▪ *Communication Skills*			
▪ *Working on own initiative*			
▪ *Networking Skills*			
▪ *Persuasive strength*	*Behaviour-oriented Individuals*		
▪ *Openness*			
▪ *Proactivity*			
▪ *Pragmatism*			
▪ *Respectfulness*			
▪ *Give first Mentality*			
▪ *Trustworthiness*	*Attitude-oriented Individuals*		
▪ *Entrepreneurial Mindset*			
▪ *Motivation*			
▪ *Empathy*			
▪ *Enthusiasm*			

Appendix 3-7: Learning Mechanisms of Partnership Tools and Activities (with in-vivo codes) (1)

In-vivo codes	*1st Order Concepts & 2nd Order Themes*		*Aggregate dimensions*
▪ *Definition of Search Fields and Areas of Activity*	Strategic Planning	Sensitisation- & Preparation-related Tools / Activities	Tools & Activities
▪ *Use Case and Business Case Workshops*			
▪ *Competitor Analysis*			
▪ *Scenario & Trend Analysis*			
▪ *Ambassador Circle of Executives*	Stakeholder Inspiration and Communication		
▪ *Lighthouse and Collaborative Bootlegging Projects*			
▪ *Interviews with Business Units*			
▪ *Internal Corporate Events to explain Startups Strategy*			
▪ *People Business*			
▪ *Creation of Problem Statements*			
▪ *Internal Research Reports and Briefings*			
▪ *Internal Education Events to illustrate new technologies*			
▪ *Target Group and Needs Analysis*	Collaboration Readiness Analysis		
▪ *Benchmarking based on startup-friendly Processes*			
▪ *Internal Asset and Competence Analysis*			
▪ *Value Chain Attacker Analysis*			
▪ *Case Studies based on Collaboration Scenarios*			
▪ *On the Job Training*	Internal Training		
▪ *Learning tours and expeditions*			
▪ *Startup Collaboration Conferences*			
▪ *Internal workshops to sensitise for cultural differences*			
▪ *Using Social Media Channels*	Awareness and Visibility Building	Exploration- & Identification-related Tools / Activities	
▪ *Signaling existing Reputation and Brand to Market*			
▪ *Word of Mouth*			
▪ *Engagements as Speaker on Events*			
▪ *Event Sponsoring*			
▪ *Newsletter*			
▪ *Landing pages and Websites*			
▪ *Technology Mapping*	Analytical and Methodology-based Research		
▪ *Internal Company (Short)lists*			
▪ *Cluster Analysis*			
▪ *Outsourcing to specialised firms*			
▪ *Corporate Network*	Formal and Informal Networking		
▪ *Personal Network*			
▪ *Employees Network*			
▪ *Innovation associations*			
▪ *Accelerator*	Individual Startup Programs		
▪ *Co-Creation Projects*			
▪ *Startup Challenges & Awards*			
▪ *Search Tools*	Technology-based Research		
▪ *Internet Research*			
▪ *Virtual Fairs*			
▪ *Virtual Expert Groups on Social Media Networks*			
▪ *Online Tenders and Intermediary Platforms*			
▪ *CEO and other executives*	Engagement of Individuals		
▪ *Internal local scouts*			
▪ *Official contact person for startups*			
▪ *Committee Work*			
▪ *Corporate Shareholders and Owner*			
▪ *Pitch Challenges (for Startups)*	Organising and participating in Events		
▪ *Dinner*			
▪ *Lab Days*			
▪ *Startup Weekends*			
▪ *Speed Dating*			
▪ *Hackathons*			
▪ *Reverse Pitch Events (for established Corporations)*			
▪ *Fairs*			
▪ *Meetups*			
▪ *Conferences*			

Appendix 3-7: Learning Mechanisms of Partnership Tools and Activities (with in-vivo codes) (2)

▪ *Official Gateway and OI Platform*	Direct Pooling	Synchronisation- & Coordination-related Tools / Activities	Tools & Activities
▪ *Standardised Submission Forms*			
▪ *One Stop Shop / Drop-in Center*			
▪ *Internal Program Application Lists*	Indirect Pooling		
▪ *Internal Platform & Database*			
▪ *Internal knowledge exchange*			
▪ *Stakeholder Jury*	Expert Interaction	Evaluation- & Selection-related Tools / Activities	
▪ *Professional External Advice*			
▪ *Criteria-Based Partner Selection & Evaluation Checklist.*	Information Analysis		
▪ *Business Model Templates & Frameworks*			
▪ *Use Case and Business Case Analysis*			
▪ *Desktop Research*			
▪ *Application of Scoring Model*			
▪ *Information Documents & Pitchdeck Analysis*			
▪ *Feedback Provision*	Communication Analysis		
▪ *Individual Pitches for Introduction*			
▪ *Q&A*			
▪ *Video Conferences*			
▪ *Firm-specific Asset Catalogue*	Resource Management	Planning- & Initiation-related Tools / Activities	
▪ *Stakeholder Coordination*			
▪ *Non-Disclosure Agreement*	Contractual Agreements		
▪ *Letter of Intent*			
▪ *Internal Booklet with requirements*			
▪ *General Terms and Conditions*			
▪ *Pilot Project Contract*			
▪ *Collaboration Project Contract*			
▪ *Co-Creation Pilot and Test Project*	Collaboration Model Determination		
▪ *Buyer-Supplier relationship*			

Appendix 3-8: Learning Mechanisms of Control and Management Processes (with in-vivo codes) (1)

In-vivo codes	*1st Order Concepts & 2nd Order Themes*		*Aggregate dimensions*
▪ *Easier to represent startups as respectable partner with less background information because startups as innovation partners became more common.*	Top-Management mindset change	Top-Management Support	Control and Management Processes
▪ *Startups are identified, because new business fields are analysed besides the core competence.*			
▪ *Time to market is more important than "Do it yourself."*			
▪ *More solution-oriented thinking because of attacked business model.*			
▪ *Being open as non-innovative large firm is necessary to get innovation from the market.*			
▪ *External co-operation leads to internal co-operation.*			
▪ *Self-awareness to act faster and to be more curious.*			
▪ *Several large and expensive digital projects went all down the drain.*			
▪ *Self-awareness that entering new (digital) business fields is the future.*			
▪ *Self-awareness that OI plays a strategic role in the future.*			
▪ *Result of internal startup bootlegging project whereas the CEO was fully aware about it.*	Top-Management Commitment		
▪ *Self-awareness that internal processes are too slow to provide new (digital) products for own customers.*			
▪ *Toward agile management decisions (5 Year business case vs. agile organisations).*			
▪ *New organisational structure was introduced to foster innovation within the whole company but also support externally-oriented projects.*			
▪ *Decision-making through the board after having a first test project with a first prototype.*	Top-Management Involvement		
▪ *Group committee and CEO usually decide at the last out of three stage gates (market launch).*			
▪ *The Management Board decides on the new partnering service not because of the investment sum but because of the overall effect for the whole company (customers included).*			
▪ *Innovation Council and CEO decide on an idea-based one pager before starting a stage gate process.*			
▪ *Results from startup collaboration projects need top management decisions, because its potential impact on corporate firm is so large.*			

Appendix 3-8: Learning Mechanisms of Control and Management Processes (with in-vivo codes) (2)

In-vivo codes	***1st Order Concepts & 2nd Order Themes***		***Aggregate dimensions***
▪ *It does not make sense to build new processes because every startup delivers different values to our firm. Usually they need different things from us at each stage.*	Case-by-case processing	Process Flexibility	Control and Management Processes
▪ *Every collaboration project with startups is different, because it depends on current chances, current business needs or involved people and on their social network.*			
▪ *Working with colleagues from the HR, Finance, or Legal departments always slows the innovation process down. Working with them should be avoided where possible.*			
▪ *There are partners, which are especially relevant in the early beginning (ideation phase) of the process. When creating specific projects other project partners join.*			
▪ *Innovation should be not seen as a process. Working with startups is ultimately so different. Some are low hanging fruits where the pilot project lasts only 50 days. There are others where many more iterations are necessary. Moving linear from left to right in a process is very rare.*			
▪ *New requirements are placed on the internal legal department to streamline contracts, guidelines, and other rules.*	Modification of existing processes		
▪ *Existing contracts are not practicable for startups. Startups have no solid legal knowledge and no legal counsel who can review the whole contract.*			
▪ *When startups need their own new brand, everything is done to change the overall processes to make that possible in the future. That also applies to procurement processes.*			
▪ *An exclusive startup collaboration agreement was created, that provide the basic legal framework.*			
▪ *Based on the internal bootlegging startup project a positive discussion with the legal and procurement department was held to introduce new processes.*			
▪ *The collaboration and innovation processes glide into each other. The innovation process is open even for external parties.*	Harmonisation of existing processes		
▪ *In a buyer-supplier relationship with a startup the standard processes are always used. For example, when hardware is bought from startups it is nothing different than buying a piece from another supplier.*			
▪ *A superficial innovation process is used: idea generation, idea evaluation, conceptual phase, MVP, pilot, and market launch. Consequently, the startup-related formats were assigned to these individual stages.*			
▪ *The internal innovation process was enhanced to fulfill a dual role: the establishment of internal competencies in combination with external competencies.*			
▪ *The firm uses an idea to market process where external collaboration is an additional entry lane, which finally accelerates the process.*			
▪ *Every collaboration with a startup is a project and every project is guided through a project life cycle.*			
▪ *A new startup screening process was implemented within the team to scout startups systematically.*	Establishment of new processes		
▪ *New processes are evaluated to provide startups additional services such as legal advice.*			
▪ *Solid feedback can be provided to startups based on a new evaluation process.*			
▪ *New processes are necessary between the test phase and the rollout to avoid interruption.*			
▪ *A type of venturing process is needed because if a startup is valuable to the firm it should be possible to invest and participate in the collaboration in the long term.*			

Appendix 3-8: Learning Mechanisms of Control and Management Processes (with in-vivo codes) (3)

In-vivo codes	*1st Order Concepts & 2nd Order Themes*		*Aggregate dimensions*
▪ *When the idea of a startup has a transformational and disruptive character the budget to develop a solution comes from the innovation department.*	Access to project budgets	Internal Project Autonomy	Control and Management Processes
▪ *The team has a budget to develop new business models. Originally it was mostly intended to be used for internal topics. But now we in fact use it for internal and external topics. It has just evolved that way.*			
▪ *A project leader can apply for a budget of 50,000 Swiss francs. S/he can spend 30,000 on communication or give 50,000 to the startup.*			
▪ *If it is a smaller topic (under € 100,000) that is focused on one solution to one specific problem it can be decided by the scouting department. In this case it does not have to be presented to the committee.*			
▪ *A specific fund, which is accessible during the year to finance products would be appreciated.*			
▪ *The department has its own "play money" to finance such pilot but the business units do also have their own innovation budget.*			
▪ *Currently, other departments are not able to see it. These topics are too far away from things done today in the firm. Consequently, a decision is made by the innovation department to pursue the project further*	Freedom of decision-making		
▪ *The decision is made by the innovation team. The original preparation comes from the business developer, because he is the expert for his topic.*			
▪ *If the scope is linked to functionalities the project leaders decide.*			
▪ *The managing team of the accelerator decides which startups will be in the next round.*			
▪ *The decision on a certain investment is made by the innovation team.*			
▪ *Working with pilots helps to enter a fast test and learn mode. The goal is to test things and recognise results rapidly to finally make fast decisions.*	Lean project execution setup		
▪ *An important tool is the pilot testing. Simply trying things, because then you can see everything.*			
▪ *The possibility to set up a startup collaboration project easily for further validation is needed.*			
▪ *Definition of project goals.*	Project-specific conditions	Project-specific Agreements	
▪ *Definition of project plan (Duration, Milestones, Meetings).*			
▪ *Definition of project responsibilities (Contact persons for customers, Controlling, Project Management).*			
▪ *Definition of future scenarios (Business Model, Margin Distribution).*			
▪ *Definition of rights and obligations of involved parties (IP, Deliverables).*			
▪ *Definition of distribution of brought resources.*			
▪ *Definition of budget and compensation level*			
▪ *Definition of termination and exit clause.*			
▪ *Definition of individual performance criteria.*			
▪ *Degree of profitability.*	Project-specific performance indicators		
▪ *Degree of learning gains.*			
▪ *Degree of impact (Communication, Reputation).*			
▪ *Degree of customer feedback.*			
▪ *Degree of customer acceptance and satisfaction.*			
▪ *Number of transactions and conversions.*			
▪ *Number of users.*			
▪ *Number of acquired customers.*			
▪ *Number of revenues.*			

Appendix 3-9: Learning Mechanisms drawn from External Parties (with in-vivo codes)

In-vivo codes	***1st Order Concepts = 2nd Order Themes***	***Aggregate dimensions***
▪ *Trendscouting & Trend monitoring firms*	Inspiration Partners	External Parties
▪ *Other Large firms*		
▪ *Technology Firms*		
▪ *Company Building Firms*	Exploration Partners	
▪ *Serial Entrepreneurs*		
▪ *Business Angels*		
▪ *Physical Startup Hub Operator*		
▪ *Operator of Accelerator Programs*		
▪ *Universities*		
▪ *Media and Publishing Firms*		
▪ *Provider of Search Tools*		
▪ *Provider of digital Platforms*		
▪ *Provider of Co-Working Spaces*		
▪ *Conference Organisers*		
▪ *Other Large firms (Industry-related)*		
▪ *Other Large firms (Cross-industry-related)*		
▪ *Screening & Matchmaking Firms*		
▪ *Consulting Firms for Strategy*		
▪ *Institutional Investors*		
▪ *Venture Capital Firms*	Validation Partners	
▪ *Provider of Corporate Accelerator Programs*		
▪ *University Professors*		
▪ *Student Groups*		
▪ *Legal Firms*		

4 Selecting corporate firms for collaborative innovation. Entrepreneurial decision making in asymmetric partnerships.[7]

Abstract

Large companies increasingly look for collaborations with new ventures to accelerate their innovation process, and researchers stress the potential of such partnerships to develop innovations. But when are entrepreneurs willing to engage in a partnership with a larger player? We seek to understand when founders of new ventures are willing to engage in such asymmetric partnerships through consideration of the characteristics of the entrepreneurial decision maker and the perceived attributes of the larger counterpart. The results of a conjoint experiment with 115 startup entrepreneurs suggest that among the partner selection criteria a high level of openness on the part of the large corporate company and concise contractual design signal trustworthiness to entrepreneurs, which has a positive impact on their willingness to engage in collaborative innovation. The study also suggests that entrepreneurs' self-efficacy reduces the willingness to partner and the positive impact of concise contractual designs. The results have implications for the self-concept and design of innovation and partner management of large firms, and for entrepreneurs who consider asymmetric partnerships a growth opportunity.

4.1 Introduction

As large companies address ever more rapid technological developments, they become more aware of the need for dynamic and innovative partners to help them keep pace. As a consequence, firms have even started to build up parallel innovation processes (Sørensen & Mattsson, 2016) and specifically look for suitable new ventures to realise partnership projects, so the larger firm might profit from entrepreneurial spirit, innovative solutions, or talent (Sommer et al., 2017). New ventures meanwhile hope to benefit from the large firms' resources and access to customers. Both actors thus have good reasons to enter asymmetric partnerships (Forrest & Martin, 1992; Colombo et al., 2006; Weiblen & Chesbrough, 2015).

Surprisingly, research has paid little attention to the potential of entrepreneurs to serve as serious and promising innovation partners (Hébert & Link, 2006b) alongside traditional

[7] Accepted for publication by double-blind peer-reviewed International Journal of Innovation Management (IJIM). Moreover, earlier versions have been presented at ICE/IEEE International Technology Management Conference 2018 in Stuttgart, Germany and at AoM Meeting 2018 in Chicago, USA. The study was written with co-author Dr. Elisabeth Berger.

partners such as customers, or research organisations (Spender et al., 2017). Researchers tend to focus on large firms and their collaborative behaviour to pave the way for asymmetric partnerships and make them more effective. In order to increase the quality and quantity of promising collaborations with startups, large companies generally need to understand how startups operate (Minshall et al., 2010) and specifically to appreciate the perspective of the entrepreneurs—an understanding that must encompass entrepreneurs' decision-making behaviour based on partner selection criteria.

The perspective of the entrepreneur in this trade-off situation (Alvarez & Barney, 2001; Vandaie & Zaheer, 2014) between the choice of growth opportunity, or independence, or intellectual property loss has frequently been ignored in the innovation and partnership literature (Usman & Vanhaverbeke, 2017). The role of perceived trustworthiness and its influence on the willingness of an individual partner is especially relevant in this asymmetric interplay, but has been largely neglected (Wang et al., 2015).

Linking these specific aspects to the decision-making behaviour of entrepreneurs based on the existing findings of the entrepreneurial decision-making literature reveals that in order to fully understand the assessment of an entrepreneurial activity (the exploitation of an opportunity through partnerships), researchers should not only consider the activity itself and the specific entrepreneurial decision context (such as industry or collaborative/competitive factors) but also common characteristics of entrepreneurs such as experiences, metacognitive thinking, and entrepreneurial self-efficacy (Shepherd et al., 2015). In particular, the relationship between the entrepreneurial self-efficacy and the variety of entrepreneurs' decisions for entrepreneurial activities and tasks remains under-researched, although some effects have been reported in recent studies (Cassar & Friedman, 2009).

These gaps in the entrepreneurship, innovation management, and partnership literature lead us to the research question of just when entrepreneurs are willing to engage in asymmetric partnerships with large corporate firms. To address this question, we conduct a conjoint experiment in which 115 independent entrepreneurs are confronted with a dyadic partnership scenario and varying contextual partnership conditions that represent a possible partnership opportunity. The partnership and trust literature (Das & He, 2006; Mayer et al., 1995) indicates entrepreneurs judge combinations of different partner selection criteria that might cause them to perceive the partner to be sufficiently trustworthy to partner with, despite the asymmetry of the relationship. In accordance with the entrepreneurial decision-making literature (Shepherd

et al., 2015), here the personal characteristics of the entrepreneur, specifically his or her entrepreneurial self-efficacy, were measured in a survey and included as a moderator.

To bridge the identified research gap, this study contributes to the literature in four distinct ways. First, we bolster the theory of asymmetric partnership by revealing startup entrepreneurs to be promising corporate innovation partners. Second, we stress the relevance of signalling trustworthiness to entrepreneurs selecting a large corporate partner. We thereby specifically illuminate the direct relationship between four different attributes of perceived trustworthiness and entrepreneurs' willingness to engage in a partnership. Third, this study advances the entrepreneurial decision-making literature and illustrates its complexity; that is because its results show that analysing the entrepreneurial decision only based on specific entrepreneurial activity and the entrepreneurial decision context leads to different results than are obtained if the personal characteristics of the entrepreneur as decision maker are included. Fourth, the study adds to the discussion of the impact of entrepreneurial self-efficacy on a decision-based outcome by providing empirical evidence for a negative impact on the willingness to partner. Understanding the entrepreneurs' perspective thus offers important information for corporations seeking partnerships with startups in the formation stage.

The remainder of the paper is structured as follows: The next section presents the theoretical background on the role of innovation partner management in the context of asymmetric partnerships and also the particularities of entrepreneurs' decision-making behaviour. Based on the theoretical background provided, we present the derived hypotheses in section three. Subsequently, the conjoint research design and the data sample are explained. The results of the quantitative analysis are presented in section five, followed by the discussion, avenues of future research, and conclusion.

4.2 Theoretical background

4.2.1 Organisational innovation partner management

Companies recognise that digitisation in particular is driving an increasing pressure on global innovation markets. Consequently, firms have started to restructure their innovation partner portfolio and seek suitable new collaboration partners to develop and combine new solutions for customers and to reduce time to market (Hagedoorn, 1993). Tether (2002, p. 949) describes an innovation-oriented partnership as, "active participation in joint R&D and other

technological innovation projects with other organisations, [which] does not necessarily imply immediate commercial benefits from the venture."

Engaging with different types of partners increases the innovation potential and improves innovation performance (Yu & Lee, 2017), but also increases the organisational complexity for both the lead firm and the partner. Narula (2004) and other studies (e.g. De Man et al., 2009) report how failing partnerships seem to be the norm. Therefore, it is relevant to understand how partnerships can be developed successfully and anchored sustainably within organisational innovation management (De Meyer, 1999). Partnership management is a multi-dimensional construct that considers both partner management capability and the ability to bridge technological distances through the social integration of appropriate partners (Enkel et al., 2017) and includes developing trusting relationships (Rothaermel & Deeds, 2006).

Several studies emphasise the necessity of having an organisational process model for the management of a partnership life-cycle (Spekman et al., 1998). Those studies provide frameworks consisting of a varying number of stages and related tasks to manage (Das & Teng, 2002; Hogenhuis et al., 2017) including aspects on how and when firms search, find, evaluate, decide upon, and select a collaboration partner. The partnership literature emphasises that the decisions made on partnership opportunities, and especially on partner selection, are critical to the successful establishment of a partnership and to its outcome (Usman & Vanhaverbeke, 2017).

4.2.2 Characteristics of asymmetric partnerships

The ability to manage a partnership is primarily determined by the partner firms themselves, which can differ in terms of business focus or specific firm characteristics (Rothaermel & Deeds, 2006). Considering these differences requires a deep understanding of the partner organisation.

In the past, startups have often been neglected as potential innovation partners (Bahemia & Squire, 2010), possibly because startups are "generally young, small and highly innovative firms in industries with rapidly developing technologies" (Das & He, 2006, p. 120) that suffer from the liability of newness (Aldrich & Auster, 1986) and smallness (Stinchcombe, 1965). However, they act fast and offer several meaningful benefits such as flexibility, creativity, and expertise, which can make them an indispensable innovation partner for large firms (Weiblen & Chesbrough, 2015; Simon & Leker, 2016).

The literature refers to partnerships between unequal actors as asymmetric (Kalaignanam et al., 2007; Minshall et al., 2010; Hogenhuis et al., 2017). The asymmetry results from the fundamental differences and almost opposing characteristics of startups and large corporate firms, or startups and venture capital (VC) firms. These differences are especially linked to structure, communication, power, and available resources (Das & He, 2006), but also to their absorptive capacity (Larrañeta et al., 2017).

Partners who can offer not only access to otherwise very expensive or unavailable resources but also a strong reputation are especially attractive to new ventures. The new venture on the other side typically has promising ideas, technological knowledge, organisational agility, and willingness to take risk, which are qualities attractive to corporations (Weiblen & Chesbrough, 2015; Jang et al., 2017). From the perspective of the smaller actor, these partnerships potentially involve benefits but also high risks with regards to potential exploitation or even intellectual theft (Doz, 1987). Alvarez & Barney (2001) argue that the risk of exploitation is amplified by the imbalance in absorptive capacity between the two actors, leading to a so-called *learning race*. The learning advantage of the more powerful partner might lead to opportunism and go as far as prompting it to initiate a competitive situation (Bouncken et al., 2015). Forrest & Martin (1992) provide empirical evidence that the lack of mutual trust explains the failure of partnerships between asymmetric partners. Therefore, trust between the partners plays a decisive role in building a strong relationship and in enhancing the value of a partnership (Alvarez & Barney, 2001).

4.2.3 Trust development in the partner formation stage

In first-time partnerships, trust is a result of a complex developmental process and is generally a critical factor and one usually absent by default (Blomqvist et al., 2005). That is due to the presence of a high level of uncertainty in terms of hidden agendas and partner competences. From the entrepreneurs' perspective, trust is not only absent, it could be perceived as negative (Doz, 1987; Katila et al., 2008), because this trust asymmetry is linked to the power difference between the partners (Schoorman et al., 2007; Wang et al., 2015). The same might be true for the larger counterpart, because the startup lacks a track record (Graebner, 2009). However, Wang et al. (2015) criticise studies on inter-firm relationships for assuming that partners' trust is usually symmetric in the formation stage. However, this is less likely to be the case in asymmetric partnerships.

The formation stage, which focuses on the initiation and the setup of the partnership and especially on identifying and selecting suitable partners (Das & He, 2002; Guertler & Lindemann, 2016), offers a decisive and challenging trial period (Kelly et al., 2002) in which to assess the trustworthiness of partners (McKnight et al., 1998). Trustworthiness and subsequently trust may easily dissolve if one or more partners act opportunistically. To avoid that situation, both parties must be willing to invest in the process itself, as doing so improves the mutual understanding of organisational cultures and goals (Larson, 1991; Blomqvist et al., 2005). An intense interaction develops trust (Kale et al., 2000) and increases the flow of information between the partners. During this period, both partners set out rules and gain insights through practising such collaborative routines (Howard et al., 2016). The parties involved can establish their credibility "through demonstrated performance capabilities and their style of conducting business (e.g. fairness, straightforwardness)" (Larson, 1991, p. 176). Once credibility is established, the parties can assess each other's trustworthiness.

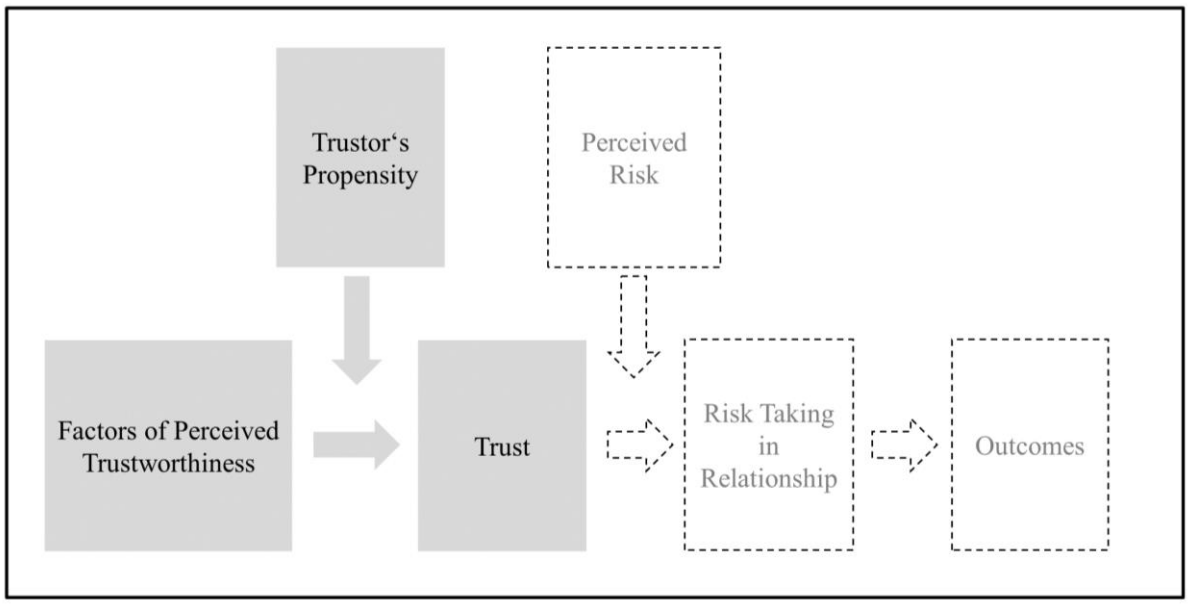
Mutual trust might develop between partners in a relationship for which trustworthiness (that is a set of individual perceived attributes) is a prerequisite (Maxwell & Lévesque, 2014; Mayer & Davis, 1999). Accordingly, Becerra et al. (2008) emphasise that the perception of the involved partner's trustworthiness is positively linked with the actors' willingness to take risks. Moreover, Dyer and Chu (2003) offer empirical evidence that a high level of trustworthiness has a positive impact on the performance in exchange relationships.

In the formation stage and early process of selecting a corporate partner, entrepreneurs might only assess *perceived* trustworthiness, which "is based on an attribute of other organisations and their representatives rather than an attribute of the future alliance relationship (trust)" (Daellenbach & Davenport, 2004, p. 187). Researchers have defined several concepts of trustworthiness and trust with various types and numbers of sub-dimensions and assumptions about interactions (Das & Teng, 2001; Seppänen et al., 2007). The model proposed by Mayer et al. (1995) (See Figure 4-1) suggests organisational trust results from perceived trustworthiness in interaction with the trust propensity of the trustor.

Because this study focuses on startup entrepreneurs it is important to mention that Mayer et al.'s model explains trust on the individual and the organisational level (Schoorman et al., 2007). Accordingly, perceived trustworthiness consists essentially of a set of different trustee attributes, for which entrepreneurs might seek indicators so as to make decisions on entering new relationships. Selecting a partner is a very critical moment for entrepreneurs and depends

on the perceived trustworthiness of the entrepreneur (trustor) and on the attributes the large corporate (trustee) is signalling.

Figure 4-1: Model of trust (adapted from Mayer et al., 1995)



4.2.4 Entrepreneurs' decision making in the partner formation stage

As collaborative projects are realised on the individual level, entrepreneurship research identifies differences between entrepreneurs and corporate managers based on personal characteristics and their decision-making behaviour (Busenitz & Barney, 1997). The topic of entrepreneurial decision making refers to how entrepreneurs assess and exploit opportunities, as well as entrepreneurial entry and exit decisions, and takes place where the environment (as the entrepreneurial decision context) and the characteristics of the entrepreneurial decision maker interact (Shepherd et al., 2015).

Interestingly to date, with only one exception, the exploitation of business opportunities via partnerships has not been directly analysed in the entrepreneurial decision-making literature. Zander (2007) does theoretically describe how boundary decisions are influenced by entrepreneurs' convictions about implementing an idea in the marketplace. When entrepreneurs are seeking external resources or services, they possibly do not perceive understanding and acceptance from potential business partners in the very early phases when only a subjective scenario of a future market event exists. This might lead to centralised decision making and the internalisation of activities instead of coordinating market-related activities.

The environment as an entrepreneurial decision context refers to the perception of external factors (including industry or competitive and institutional factors), while the notion of the characteristics of the entrepreneurial decision maker corresponds to personal traits or capabilities, such as entrepreneurial self-efficacy (ESE) (Gatewood et al., 1995). The complex interplay of these three dimensions with a strong focus on entrepreneurs as decision makers and their ESE has been not sufficiently captured by existing entrepreneurial decision-making studies (Shepherd et al., 2015).

An individual's ESE describes the person's belief in the ability to undertake the actions necessary to launch a new venture (McGee et al., 2009). This construct strongly affects individual choices in the context of entrepreneurial decision making (Chen et al., 2004), but to exert a strong predictive power it needs to be directed at a specific activity (Bandura, 1977).

Because trust depends on the specific context (Mayer et al., 1995) such as the balance of power in the relationship and the perception of the level of risk, we follow Shepherd and Zacharakis (2001), who developed a theoretical *trust building model* for asymmetric partnerships. That work claims that for both partners to profit from a partnership requires the presence of four attributes of perceived trustworthiness: openness, commitment, portfolio similarity with the partner, and procedural justice through the design of contractual terms.

First, to perceive the counterpart as being open is relevant because openness includes disclosure of personal information (e.g. feelings), disclosure of non-personal information (e.g. objectives), and linguistic choices (type of language) (Eisenberg & Witten, 1987). A working partnership also includes communication behaviour such as being transparent, giving feedback, being willing to explain, sharing information, or providing access to it (Maxwell & Lévesque, 2014).

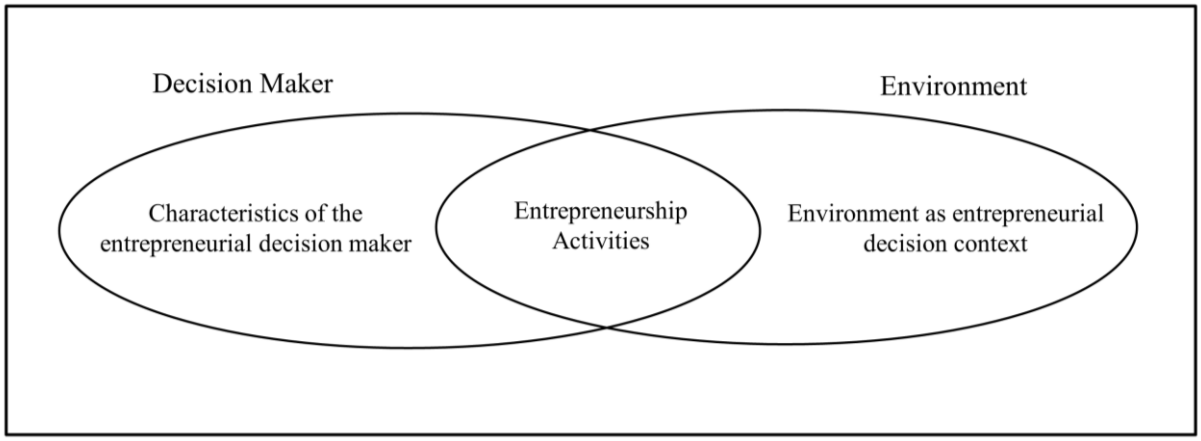
Second, commitment—defined as "[an] implicit or explicit pledge of relational continuity between exchange partners" (Dwyer et al., 1987, p. 19)—is relevant for trust development, because entrepreneurs receive a signal from the partner indicating interest in designing and developing a relationship based on incremental steps (Shepherd & Zacharakis, 2001).

Third, a foundation of trust between two parties is often more easily developed when both parties perceive themselves to be similar (McAllister, 1995); which might mean in terms of knowledge, background, or other similar characteristics. In particular, similar market portfolios play an essential role in partnerships, which aim to derive benefit from additional capacities or resources (Das & Teng, 2000).

Fourth, a contractual design that reflects the entrepreneurs' desire to be treated fairly and justly (Shepherd & Zacharakis, 2001) increases the level of trustworthiness of a partner. Trust is developed, because a partner shows that s/he is willing to accept a set of principles and follow distinct obligations (Blomqvist et al., 2005). These obligations can be safeguarded in practice by drafting contracts in a way that reflects an objective balance (Reuer et al., 2006).

When linking the partnership management and trust literature to the entrepreneurial decision-making research, we follow the *Map of Entrepreneurial Decision-Making Research* designed by Shepherd et al. (2015) (See Figure 4-2), which captures each of the three presented dimensions of entrepreneurial decision making: The *Entrepreneurship Activities*, the *Environment*, and the *Decision Maker*.

Figure 4-2: Map of entrepreneurial decision-making research (adapted from Shepherd et al., 2015)



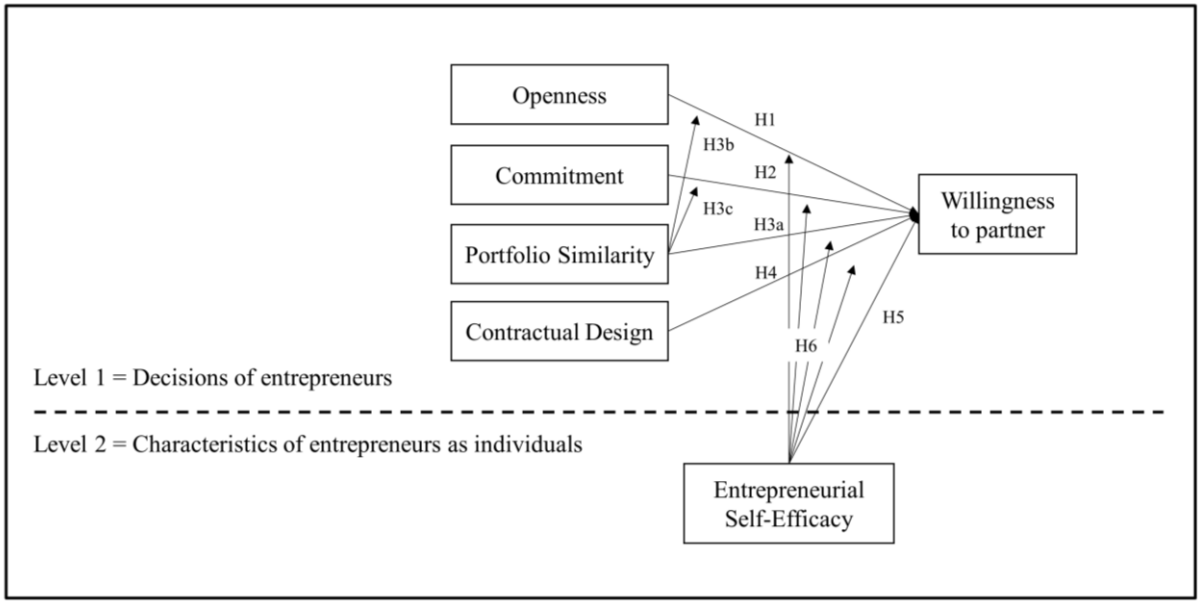
Consequently, we suggest that the environment as an entrepreneurial decision context and the entrepreneur's characteristics influence the entrepreneurial decision making in terms of high levels of perceived trustworthiness leading to an increased willingness to select an asymmetric partner based on perceived trustworthiness.
In accordance with the theoretical embeddedness presented above, we next derive testable hypotheses on how the external context of attributes that enable an entrepreneur to assess the perceived trustworthiness influence the willingness to partner with a larger party.

4.3 Hypotheses

Figure 4-3 graphically summarises the hypotheses derived on the relationship between contextual attributes of a potential partnership that enable an entrepreneur to assess the

perceived trustworthiness, and hence foster the willingness to partner with a larger player. Moreover, we hypothesise on the impact of the internal attribute ESE on the willingness to partner, and on the interaction with the contextual attributes.

Figure 4-3: Research design



Openness is a relevant partnership criterion for entrepreneurs when assessing potential partnerships with established partners, as a high level of openness can persuade an individual to perceive another individual as trustworthy (Norman et al., 2010). Openness signals to the entrepreneur the potential partner's willingness to communicate with others (Geum et al., 2013), to enable learning (Inkpen, 2000), to make relevant knowledge-holders accessible (Das & He, 2006), and to make sufficient and high-quality information available (Thomas et al., 2009). These implications derived from openness can hence lead to a perception of trustworthiness that involves a low perceived risk of opportunism and meaningful benefits from the partnership (Gulati, 1999), which is especially relevant in an asymmetric partnership.
Therefore, we hypothesise:

H1: The entrepreneur's willingness to partner with a large firm is higher when the partner firm demonstrates a high level of openness.

Large firms usually manage many different types of partnership and objectives at the same time and also have established routines when working with partners (Faems et al., 2005; Laursen &

Salter, 2006), while for the entrepreneur the opposite is usually true. The entrepreneur attaches more importance to the potential partnership, while she or he cannot be sure whether the established firm views the partnership as equally important. This is why a high level of commitment of the senior partner is a crucial partner selection criterion.

A high level of commitment embraces both the willingness to provide tangible or intangible resources (such as money, skills, and people) to the partnership and the readiness to accept temporary concessions in order to acquire benefits over time (Dwyer et al., 1987). Gundlach et al. (1995) argue that more commitment from both partners can lead to a long-term relationship, whereas less commitment from one partner can lead to opportunism. Established partners may also signal commitment by involving top management, which is crucial to the success of partnerships (Chin et al., 2008). Walters et al. (1994) stress the relevance of demonstrating commitment by involving top management even in operative tasks related to the partnership, when the level of trust is declining.

Accordingly, we hypothesise:

H2: The entrepreneur's willingness to partner with a large firm is higher when the commitment of the partner firm is high.

The market portfolio of innovation partners can range from a high level of similarity (compatible and common) to a low level of similarity (complementary) (Das & Teng, 2000, 2002). When potential partners have similar portfolios (which also indicates similar abilities) both parties normally face similar market conditions and customer needs (Bouncken et al., 2015). Moreover, a high level of portfolio similarity between two potential partners increases the likelihood of similar knowledge bases, dominant logics, and cognitive frameworks (Schildt et al., 2005). Furthermore, empirical evidence from partnerships between VC firms and entrepreneurs shows that similarity in terms of personal characteristics increases the matching probability (Bengtsson & Hsu, 2010). These similarities are prerequisites for mutual learning and knowledge exchange (Lane & Lubatkin, 1998) and can foster effective communication (Steensma et al., 2000) and improve effective decision making during the collaboration (Chung et al., 2000; Franke et al., 2006). We hypothesise:

H3a: The entrepreneur's willingness to partner with a large firm is higher when the portfolio similarity with the partner firm is high.

Despite the benefits of shared visions, practises, and logics implied by the portfolio similarity, such similarity also pushes the relationship between two partners closer toward competition and further away from cooperation. This paradoxical situation is also referred to as coopetition (Luo, 2007). It is paradoxical, as the higher level of competition can lead to hidden priorities and increases the risk of opportunism, which in asymmetric partnerships in particular threatens the smaller partner (Hora et al., 2018). Accordingly, a high level of portfolio similarity could lead the entrepreneur to perceive the openness and commitment of an established partner differently than if the two organisations perceived their portfolios to diverge from each other. The increased risk of being in competition with a stronger player, might cause entrepreneurs to be wary of being open and committed. However, if the established partner is very open or committed, the entrepreneur might feel there is an expectation of reciprocity. Consequently, the portfolio similarity might have an impact on the relationship between openness and willingness and between commitment and willingness.

Accordingly, we hypothesise:

H3b: The entrepreneur's willingness to partner with a large firm with high levels of openness is lower when the similarity between the entrepreneur's and large firm's portfolio is high.

H3c: The positive relationship between the large firm's commitment and the entrepreneur's willingness to partner with a large firm is less positive when the similarity of the portfolio is high.

In asymmetric partnerships in particular, new ventures might seek to select partners from whom they expect fair and just treatment (Shepherd & Zacharakis, 2001). Contracts in terms of formal, written non-equity agreements (Blomqvist et al., 2005) can provide guidelines and define mutual rights and obligations (Reuer et al., 2006) and thereby make the behaviour more predictable (Gulati, 1995).

Contracts play an essential role, especially in transaction costs theory, because related and necessary activities generate costs to safeguard the exchange between partners (Das & Teng, 2000). Alvarez and Barney (2001) emphasise the role of contracts as a protection mechanism in strategic partnerships with large firms that could reduce the risk of opportunistic behaviour

in an asymmetric partnership. Nevertheless, contracts also have limitations: Naturally no contract can fully safeguard the entrepreneur against actions taken by the large firm in the future (Stuart et al., 1999).

According to Reuer et al. (2006) entrepreneurs must review the contractual terms carefully, because there is a trade-off between conciseness (i.e., few regulations) and detail (i.e., detailed clauses). Entrepreneurs do not usually have the time and resources to review a complex contract, and when they accept a basic contract at the start of the relationship, they leave themselves open to the larger partner managing and developing the partnership to its advantage later. Detailed specifications might reduce the required flexibility and autonomy around future uncertainties especially in R&D partnerships (Hakanson, 1993).

Although Kale and Singh (2009) argue that the contractual design is a decisive aspect in the governance of the partnership, for new ventures there are at least two reasons why the design of the contract is relevant even before they first decide to work with a partner. First, both partners will often try to protect their resources even in the early stages of initiating partnerships by demanding non-disclosure agreements or similar legal documents (Reuer et al., 2006). The established firm being the stronger partner, probably with a legal department, is more likely to dictate the contractual design (Alvarez & Barney, 2001; Hora et al., 2018). Second, the approach to the contractual design can be an indicator of how the partners will manage their relationships (Sarasvathy & Venkataraman, 2011).

Given the benefits of flexibility are opposed to complexity from an entrepreneur's point of view, we hypothesise:

H4: The entrepreneur's willingness to partner with a large firm is higher when the contractual design is concise.

Alongside contextual attributes, internal attributes are also relevant in entrepreneurial decision making (Shepherd et al., 2015). Following Mayer et al. (1995, p. 715) the propensity to trust is first an intrapersonal trait that "leads to a generalised expectation about the trustworthiness of others." It follows that trust propensity varies between people, because of their different experiences, cultural backgrounds, and personality types (Hofstede, 1980; Mayer et al., 1995).

Stajkovic and Luthans (1998) and Miao et al. (2017) conclude from meta-analyses that there is a significant relationship between self-efficacy and work-related performance and ESE and firm performance. The same relationship can be discerned in specific entrepreneurial working tasks such as creating a business (Cassar & Friedman, 2009), pursuing a business (Cardon & Kirk, 2015), growing a business (Baum & Locke, 2004), or seeking financial resources for a business (Shane et al., 2003).

Selecting partners and entering a partnership are complex and demanding cognitive tasks that require a high level of confidence and excellent planning skills (Bryant, 2009; Shane et al., 2003). The selection process may thus include an analytical evaluation of and structured coordination with the potential partner, and the early stages of a partnership also benefit from considered communication. Therefore, we assume that entrepreneurs with a high level of ESE relating to planning are more likely to collaborate, because they might assess the collaboration to offer a specific opportunity to rapidly develop their new venture.

Therefore, we hypothesise:

H5: The entrepreneur's willingness to partner with a large firm is higher when the entrepreneur has a high level of entrepreneurial self-efficacy with regards to planning.

Mayer et al. (1995) argue that propensity to trust exists regardless of any specific relationship between two parties; trustworthiness in contrast, exists only in relation to another specific actor and in interaction with the environmental context (Schoorman et al., 2007). But the level of perceived trustworthiness of trustees depends on their attributes, and on the trust propensity of the trustor. Trust propensity is closely linked to individual characteristics and traits, such as ESE and might consequently influence the trust level of the trustor (Mayer et al., 1995). Individuals with a high level of ESE have great confidence in their entrepreneurial abilities and are more likely to be confident working with the uncertainties involved in evaluating partners (Kibler et al., 2017). This confidence might turn into overconfident behaviour as they tend to overestimate entrepreneurial opportunities and their economic potential (Koellinger et al., 2007). This is why we assume that entrepreneurs with different levels of ESE will differ in their evaluation of the trustworthiness of a potential partner, the challenge of working with an asymmetric partner, and thus the outcome of this entrepreneurial opportunity. This assumption also receives support through the theoretical work of Zander (2007), who developed the concept

of cognitive incongruence and cognitive incompleteness that could affect entrepreneurial boundary decisions. Zander (2007) references cognition theory to describe how potential market partners might disagree with the entrepreneur or be unable to understand the entrepreneur's subjective means–ends framework, which represents the entrepreneur's preferred way of implementing an idea. As a result, entrepreneurs who are confident and convinced tend to internalise activities to secure and achieve their envisaged paths, which might also affect their perception of the trustworthiness of a potential business partner.

Consequently, we would expect that entrepreneurs with a high level of ESE and thus a high propensity for intrapersonal trust value the trustworthiness indicated by partner attributes lower than other entrepreneurs with low levels of ESE. This is why we hypothesise:

H6: The positive relationship between the partner selection criteria (openness, commitment, portfolio similarity, and contractual design) and the willingness to partner with a large firm is reduced by a high level of entrepreneurial self-efficacy.

4.4 Method and research design

4.4.1 Sample description

We adopted a systematic approach to identify active and independent entrepreneurs from Germany who had founded at least one technology-oriented venture, and compiled the results in a new database of entrepreneurs. Primarily, we focused on all possible venture-related activities in the last six years in Baden-Württemberg, Germany, which is one of the most innovative eco-systems in Europe (Hollanders et al., 2017). Those activities included events and awards, spaces and local technology networks, specific funding and company building programs, and financial activities on the part of investors.

We conducted internet research to collect a total sample of 729 entrepreneurs. In the fall of 2016, the entrepreneurs were invited by personal email to complete an online survey and were subsequently sent three reminders in one-week series. A group of 191 individuals responded, 130 of whom completed the entire questionnaire, equating to a response rate of 18%, which is acceptable in comparison to other studies (DeTienne et al., 2008; Wood & Williams, 2014). The average time taken to complete the questionnaire was 28 minutes.

To enhance reliability, we added a manipulation check by fully replicating decision profiles. Having original and replicated answers allowed us to test Pearson R correlations. Ultimately, 115 of the 130 entrepreneurs' responses (89%) proved reliable, recording a mean test–retest correlation of .85: Other studies (e.g. Choi & Shepherd, 2004; Haynie et al., 2009) present comparable values. The sample size of 115 entrepreneurs generating 920 decisions is much higher than comparable conjoint studies, which exclusively target entrepreneurs and their decision-making behaviour (Choi & Shepherd, 2004; DeTienne et al., 2008; Wood & Williams, 2014).

A total of 79% of the respondents reported working full-time as an entrepreneur of a specific venture. Among the respondents, 90% are male, and the average age is 33.5 years. 27% of the respondents held a PhD, 44% a master's degree, and 18% a bachelor's degree. In terms of educational background, 37% had a background in technical sciences, and 39% in social sciences, which includes economics. Among the group, 63% had a prior working relationship with a large firm (> 500 full-time equivalent). Of the respondents, 31% had experience of co-creation partnerships with large firms, but 87% had fewer than five years of entrepreneurial experience. The sample is representative of the German startup entrepreneur (Kollmann et al., 2017) and comparable to other international studies such as Choi and Shepherd (2004) with regards to age, gender, full-time commitment, and education.

4.4.2 Experimental design and instrument

Our research design consists of the conjoint experiment and a questionnaire to collect further data. Before starting the data collection procedure, we pretested the design with active entrepreneurs and experienced academics. Their feedback prompted us to amend the survey to improve its comprehensibility and ensure prima facie validity of the attributes and levels.

In the experiment, we presented a partnership scenario. Participants were briefed that several large fictitious companies had contacted them to inquire whether they would be willing to enter a partnership in a non-equity-related co-creation relationship. This focus is important, because most studies do not differentiate specifically in terms of governance modes and mainly focus on equity-related partnerships with a strategic or a financial focus (Das & He, 2006), which usually affects more mature ventures. To increase validity, we asked participants to evaluate whether they perceived the partnership scenario to be a realistic situation on a 7-point Likert scale anchored with *not realistic* (1) and *very realistic* (7). The mean value was 4.99, which corresponds to *rather realistic*.

Furthermore, we presented detailed partner selection criteria (attributes of perceived trustworthiness) before the experiment started (See Appendix 1).

We chose an experimental approach, namely a conjoint analysis. Conjoint methodology is appropriate to collect real-time data on the decisions of individuals, which makes it the method of choice in such studies (Lohrke et al., 2010). In the past, analysing the decision-making behaviour of individuals was heavily influenced by the methods selected, such as post-hoc interviews or surveys, and was thus often biased by faulty recollection (Golden, 1992).

Real-time conjoint experiments are challenging cognitive tasks for participants (Karren & Barringer, 2002). For the experiment, a fully crossed factorial design would require 16 (2^4) profiles (32 profiles with test–retest). To reduce complexity for the participants, we used an orthogonal fractional factorial design and reduced the number to eight (16 with test–retest) different profiles. Consequently, every profile includes four attributes of perceived trustworthiness with different combinations of their levels.

Given the different positions of the attributes, we also tested for order effects. Therefore, we developed four different versions of the conjoint experiment profiles, which were randomly assigned to the participants (Hair et al., 2010).

The collected data are treated as multilevel, which means that data follow hierarchies and are structured on different levels, so that relationships between lower and higher variables can be explained. In the study, level 1 represents the decisions and judgments of entrepreneurs, while level 2 relates to the entrepreneur as an individual. For data analysis, we used hierarchical linear modelling (HLM) as the analytical technique, which is "a complex form of ordinary least squares regression that is used to analyse variance in the outcome variables when the predictor variables are at varying hierarchical levels" (Woltman et al., 2012, p. 52). HLM is the preferred method to evaluate judgment data in prior and comparable conjoint studies (Haynie et al., 2009; Mitchell & Shepherd, 2010), because of its control for autocorrelation and heteroscedasticity of data (Hofmann, 1997).

4.4.3 Variables and measures

Dependent Variable. The dependent variable reflects the entrepreneur's evaluation of the partner attributes expressed as their willingness to partner, a format based on the studies of Wood et al. (2014) and Drover et al. (2014). The variable was collected using a single-item 7-point Likert scale, a practise common in conjoint studies (DeTienne et al., 2008; Haynie et al.,

2009), because reliability is already given by comparing original and repeating profiles (Wood et al., 2014). Entrepreneurs were specifically asked to assess the probability of their partnering with a large firm on a scale ranging from very unlikely to very likely (See Appendix 4-1).

Independent variables (Level 1). In line with the research design and scenario we used four independent variables, the partner selection criteria, which are openness (high vs. low), commitment (high vs. low), portfolio similarity (high vs. low), and contract design (concise vs. detail). The operationalisation is presented in Appendix 4-2. For all attributes, we used contrast-coding (instead of dummy-coding) as recommended by Judd and McClelland (1989) and Hofmann and Gavin (1998), which allows for the re-centring of categorical variables. This means we treated variables not as present (1) and absent (0) but rather as opposites (+0.5) or (-0.5), thus giving a mean of zero.

Independent variables (Level 2). In the second part of the questionnaire, we captured the variable self-efficacy of the entrepreneurs by using four items (dimension planning) of the ESE measure of McGee et al. (2009). Planning is an important task in entrepreneurial activity, which includes all activities that are necessary to reach milestones for business and growth. This includes the evaluation and selection of suitable partners and entering partnerships too (Colombo et al., 2006). We captured the responses on a 7-point Likert scale anchored with *very low confidence* (1) and *very high confidence* (7). The internal consistency of the variable measured with Cronbach's alpha is 0.62. This is still acceptable in accordance with for instance Naman and Slevin (1993) and Shepherd et al. (2013), presenting values of 0.63 and 0.60.

Control variables. We control for age and gender, because research shows that both attributes can lead to different judgments: Parker (2006) shows that younger entrepreneurs are far more sensitive to new information than older entrepreneurs. The proportion of men who decide to start a new business and that of women who choose to do the same differ (Langowitz & Minniti, 2007). In addition, we consider the entrepreneurs' experience by controlling for serial entrepreneur status (Wiklund & Shepherd, 2008). Experienced entrepreneurs are more concerned with factors and conditions related to actually starting and running a new venture than are novice entrepreneurs (Baron & Ensley, 2006) and firms managed by experienced entrepreneurs make faster decisions (Forbes, 2005). Moreover, literature suggests that prior knowledge and work experience has an impact on internalising or externalizing opportunity–exploitation decisions, which includes entering external partnerships (Zander, 2007). Finally, prior research shows that the attitude to growth influences decision-making behaviour among entrepreneurs (Cassar, 2006). This is why we followed Wiklund et al. (2003) and asked the

participants to use a 7-point Likert scale anchored with *very negative* (1) and *very positive* (7) to describe the scenario of a 100 percent increase in the number of employees in five years' time.

4.5 Results

In Table 4-1, we report the results of the descriptive statistics and correlations for the level-two variables.

Table 4-1: Means, standard deviations, and correlations for (Level 2) variables

	Variables	**Mean**	**SD**	**1**	**2**	**3**	**4**	**5**
1	Age	33.46	6.55	-				
2	Gender (% male)	0.90	0.31	-0.04	-			
3	Serial Entrepreneur (1 = yes)	0.25	0.44	0.12**	0.07*	-		
4	Co-Creation Experience (1 = yes)	0.31	0.47	0.06	0.05	0.00	-	
5	Growth Attitude	5.78	1.55	0.16**	-0.14**	0.04	0.00	-
6	Entrepreneurial Self-Efficacy	4.79	0.83	0.05	-0.04	0.17**	0.03	0.02

Notes: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; n = 920 judgments nested within 115 entrepreneurs

Control variables such as age are highly positively correlated with growth attitude and entrepreneurial experience. The latter is highly positively correlated with the ESE variable.

Knowing that multicollinearity between independent variables could be problematic we used regression analysis in line with O'Brien (2007), who recommends a variance inflation factor (VIF) lower than 10. After estimating the VIFs, which ranged from 1.02 to 1.59, we concluded multicollinearity was most unlikely to be an issue.

The results of the conjoint experiment and HLM analyses of the entrepreneurs' decisions are summarised in Table 4-2.

Model 1 is the base model and includes only level-1 variables that represent the attributes of perceived trustworthiness. Model 2 adds level-1 cross-level interaction effects. Model 3 adds level-2 independent and control variables. For the full model 4, we added cross-level interaction variables between levels 1 and 2.

Analysing the criterion *openness*, we found a strong positive and statistically highly significant relationship between high levels of openness and the willingness to partner (β=1.37, $p<0.001$). Entrepreneurs are more willing to collaborate if the level of openness of the large partner firm is high. These findings support H1.

Another strong positive and significant effect was measured between the partner criterion commitment and the entrepreneurs' willingness to enter a partnership (ß=1.26, $p<0.001$). Consequently, we see that entrepreneurs are more willing to enter partnerships when large firms show a high level of commitment. This result provides support for H2.

While we did not find a significant effect for portfolio similarity and willingness to partner (β=−.10, $p>0.05$), we found a significant positive effect for concise contractual designs on entrepreneurs' willingness to collaborate (ß=.20, $p<0.05$). Consequently, the results show that H3a must be rejected whereas H4 is supported. Interestingly, concise contractual designs lead to an increased willingness among entrepreneurs to partner, which implies that entrepreneurs prefer a non-bureaucratic project set up over complex agreements.

Analysing level 1 interaction effects between large firm's commitment and the portfolio similarity, we found a negative significant effect that supports H3c: (ß=-.18, $p<0.05$) that an existing positive relationship between the large firm's commitment and entrepreneurs' willingness to partner is less positive when the portfolio similarity is high.

Hypothesis H3b must be rejected, because there is a negative (albeit not significant) effect between the partner criteria *portfolio similarity* on the effect between large firms' *openness* and entrepreneurs' willingness to partner (ß=-.06, $p>0.05$).

Moving from Model 2 to Model 3 and taking additional level 2 variables into account, we observed a highly significant negative effect of ESE on an entrepreneur's willingness to partner (ß=-.17, $p<0.01$). Therefore, we cannot confirm H5 that proposed an entrepreneur's willingness to partner with a large firm is stronger when the entrepreneur has a high level of ESE with regard to planning.

Model 4 includes cross-level effects between the partner selection criteria on level 1 and the ESE variable on level 2. Here we find a highly significant negative effect between ESE with regards to planning and the partner criteria *contractual design* (ß=-.26, p<0.01). This result supports H6.

Table 4-2: Hierarchical linear modelling results for entrepreneurs' willingness to partner

	I		II		III		IV	
	(Only L1)		(L1 and within interactions)		(L1 and within interactions with controls)		(L1 and within interactions with controls and cross-level interaction)	
Variables								
	ß	SE	ß	SE	ß	SE	ß	SE
Level 1: conjoint experiment								
Main effects								
Commitment	1.26***	0.13	1.26***	0.13	2.12	1.13	2.12	1.13
(0.5 = high; -0.5 = low)								
Openness	1.37***	0.08	1.37***	0.08	1.74**	0.61	1.74**	0.61
(0.5 = high; -0.5 = low)								
Contractual Design	0.20*	0.09	0.20*	0.09	1.39*	0.63	1.39*	0.63
(0.5 = concise; -0.5 = detailed)								
Portfolio Similarity	-0.10	0.11	-0.10	0.11	0.34	0.91	0.34	0.91
(0.5 = high; -0.5 = low)								
Openness * Portfolio Similarity	-	-	-0.06	0.06	-0.63	0.45	-0.63	0.45
Commitment * Portfolio Similarity	-	-	-0.18*	0.09	0.95	0.71	0.95	0.71

Level 2: individual								
Entrepreneurial Self-Efficacy (Planning)	-	-	-	-	-0.17**	0.05	-0.17**	0.05
Co-Creation Experience (1=yes; 0=no)	-	-	-	-	-0.09	0.11	-0.09	0.11
Serial Entrepreneur	-	-	-	-	0.26*	0.11	0.26*	0.11
(1=yes; 0=no)								
Growth Attitude	-	-	-	-	0.10**	0.04	0.10**	0.04
Age	-	-	-	-	-0.02*	0.09	-0.02*	0.09
Gender (1=male; 0=female)	-	-	-	-	0.06	0.16	0.06	0.16
Cross-level interactions								
Entrepreneurial Self-Efficacy * Commitment	-	-	-	-	-	-	-0.19	0.16
Entrepreneurial Self-Efficacy * Openness	-	-	-	-	-	-	0.03	0.09
Entrepreneurial Self-Efficacy * Contractual Design	-	-	-	-	-	-	-0.26**	0.09
Entrepreneurial Self-Efficacy * Portfolio Similarity	-	-	-	-	-	-	-0.08	0.11
Intercept	3.88***	0.05	3.88***	0.05	4.71***	0.44	4.71***	0.44

Notes: * p < 0.05, ** p < 0.01, *** p < 0.001; n = 920 judgments nested within 115 entrepreneurs. Maximum-Likelihood estimates.

4.6 Discussion

The results contribute to the literature in four ways. First, we extend the theory of asymmetric partnerships by highlighting that startup entrepreneurs can be promising corporate innovation partners. We place the entrepreneur at the centre of the analysis and focus on a realistic collaborative innovation scenario between startup entrepreneurs and large corporate firms. Recent studies have emphasised that large corporate firms lack understanding of how startup firms and their entrepreneurs operate (Minshall et al., 2010; Usman & Vanhaverbeke, 2017). Consequently, this study treats entrepreneurs as a relevant innovation partner for the corporate

innovation partner portfolio and consequently contributes by providing insights into how entrepreneurs might select their larger corporate innovation partners (Das & He, 2006).

Second, we stress the relevance of signals of trustworthiness to the smaller partner when there is an imbalance of size. Trustworthiness is dependent on the expectations and the perception of entrepreneurs and is therefore a critical factor in their decision-making process, which is in fact a risky trade-off situation. This is why we treat partner selection criteria as attributes of perceived trustworthiness, which were operationalised based on the entrepreneur–VC relationship literature and adapted to a partnership scenario featuring a large firm.

While the existence of partnership success is often taken for granted and partner selection criteria seem to be treated as generalised constructs (Cummings & Holmberg, 2012), we also consider a more complete picture, which fits well with the reality of entrepreneurs' situation. The approach enables us to show the direct relationship between four attributes of perceived trustworthiness from an entrepreneurial perspective on their willingness to partner. While openness and contractual design signals greater trustworthiness, portfolio similarity is surprisingly irrelevant. This finding is especially puzzling, because similarity is a principal attribute discussed in partnerships between entrepreneurs and VC firms (Shepherd & Zacharakis, 2001). In partnerships, large firms offer access to a broad range of capabilities and resources and expect to benefit from the opportunity to learn from young dynamic firms in the first step, and later to make financial use of the developed innovation or technology. The results suggest that entrepreneurs neither prefer nor fear a partner with a similar portfolio, while in a partnership with a VC, similarity is a desirable aspect (Bengtsson & Hsu, 2010).

Third, this study advances the entrepreneurial decision-making literature by emphasising its complexity, represented by the three core dimensions: the entrepreneurial decision maker, the entrepreneurial activity, and the decision-making environment. The complexity of this phenomena must be accounted for from the theoretical perspective, but also with regards to the research design (Berger & Kuckertz, 2016). The entrepreneurial decision-making map developed by Shepherd et al. (2015) provides us with a framework to exclusively analyse one entrepreneurial activity, which is the exploitation of a collaborative innovation opportunity with a large partner. We amend this map by linking it to the partnership and trust literature and thereby paint a more holistic picture of the entrepreneurial decision to collaborate with larger firms. By using state of the art methods, the research design fulfils the complex requirements of the entrepreneurial decision-making phenomenon. While prior studies often focus only on the entrepreneurial decision-making context or the entrepreneurial activities, we adopt a broader

perspective by treating the entrepreneur as a decision maker and analysing the interfaces between entrepreneurs, their specific entrepreneurial activities, and their decision-making biases in a specific environmental context. For instance, the finding that the positive relationship between the large firm's commitment and entrepreneurs' willingness to partner is less positive when the portfolio similarity is high reflects the complex coopetition situation (Luo, 2007; Hora et al., 2018) that entrepreneurs find themselves in when engaging in asymmetric partnerships. We are convinced that this combination constitutes an interesting contribution to the entrepreneurial decision-making literature, but also to the partnership and OI literature.

Fourth, the study adds to the discussion of the impact of self-efficacy on an outcome by providing empirical evidence for a negative impact of ESE on the willingness to partner. Contrary to the suggested hypothesis, the results show a negative significant relationship between ESE related to planning and the entrepreneur's willingness to partner. Although most studies show a positive effect of self-efficacy on (work) performance on the individual and firm levels (Miao et al., 2017; Stajkovic & Luthans, 1998), there are also some studies offering empirical evidence for a negative impact of self-efficacy (e.g. Vancouver et al., 2002). The reason for the discrepancies probably lies in the diversity of the applied self-efficacy measures (McGee et al., 2009), the type and characteristics of the analysed individuals (Chen et al., 1998), differing task complexity (Stajkovic & Luthans, 1998), and the different types of activity or task characteristics (action-related vs. judgment-related tasks) (Trevelya, 2011). Accordingly, the relationship between ESE and the result of various tasks is determined by the entrepreneur's personal readiness to invest effort (Trevelya, 2011). Because entrepreneurs are working with restricted resources, they need to continuously decide how to allocate their time and effort across a range of necessary tasks. Consequently, decision making is ultimately dependent on the individual preference of an entrepreneur, indicating that it could therefore be influenced by various factors such as perceived complexity and difficulty (Wood et al., 2014). Entrepreneurs are also influenced by their expectations for the performance and outcomes of tasks.

Trevelya (2011) speculates that entrepreneurs would prefer tasks that accord with their beliefs on how to develop a business. If this is the case, the entrepreneur is more likely to spend time and effort on action-related tasks than on judgment tasks, such as evaluating partnership opportunities by assessing potential co-creation partners. When it comes to the analytical evaluation of information, entrepreneurs typically behave overconfidently (Simon & Shrader, 2012). This excess confidence can hinder entrepreneurs' decision making and implementation

of plans (Camerer & Lovallo, 1999; Simon et al., 2000). In the context of the current research, this means that entrepreneurs with a high level of ESE might be too confident in their ability to comprehensively evaluate the potential of a potential business partner. Moreover, entering a partnership also means potentially losing influence and independence, a situation that overconfident entrepreneurs might seek to avoid (Chen et al., 1998).

Individuals with developed planning skills naturally want to consider all eventualities. They do not like unforeseen events, which in this context would be associated with a highly complex task such as managing and coordinating a partnership, which is dependent on another party (Holmberg & Cummings, 2009).

The findings of the study are especially relevant for large companies wishing to understand the concerns and preferences of entrepreneurs when they plan to expand their innovation partner portfolio, whether that is to access different resources, competences and ideas, or to profit from the speed and entrepreneurial spirit of smaller partners (Weiblen & Chesbrough, 2015). Given the high costs of comprehensively screening a market for promising startups suited to collaborative innovation (Gürtler & Lindemann, 2016) as part of their technology scouting, and acknowledging that startups usually make overtures to corporations rather than the other way round (Hora et al., 2018), the study illustrates that corporations can take steps to appear trustworthy far in advance of entering an innovation partnership.

Those steps should include signalling their readiness for collaboration to the startup community; and one way to do so, might be to create an innovation brand. Such an enterprise would communicate via suitable channels to a broad audience (including perhaps unknown elements) to convey the corporation's innovation and trustworthiness qualities. A by-product of that approach is that it can enhance the attractiveness of the corporation to high-quality talent (Sommer et al., 2017). Such signalling undertaken by a corporation should include demonstrating it understands the relevant issues for entrepreneurs: open and frequent communication, emphasising the objective of mutual learning, and the exchange of resources. A corporation that can demonstrate its understanding of those issues will improve its chances of becoming the partner of choice among new ventures. At the same time, it is essential not to scare away entrepreneurs by presenting overly bureaucratic contract designs.

Beyond the above implications for large companies, the results are also important for entrepreneurs in that the respondents have ranked four partner selection criteria extracted from the existing literature that are specifically relevant in asymmetric partnerships.

The set of individual partner selection criteria might enable entrepreneurs to recognise and assess suitable partners before starting collaboration, and thereby move to a more strategic form of partnership management. Moreover, the results could help entrepreneurs to address and weight the aspects important to them in a partner selection process, and thus could bolster gut feelings with analytical criteria, which should lead to well considered—and probably more productive—decisions.

As entrepreneurs tend to be overconfident, they should be aware of the overconfidence bias, and learn to evaluate their opportunities consciously and carefully, especially when attempting to determine the right partner. The consequences of the wrong decision could hit the startup much harder than a large firm, and consequently entrepreneurs should consider as early as possible how they would manage a partnership with a large firm.

4.7 Limitations and future research

This study is not without its limitations. There are different views and opinions of trust, as is evident through the various definitions, meanings, and models available (Daellenbach & Davenport, 2004; Zaheer & Harris, 2006). The reason might lie in the multidimensionality and complexity of trust making it challenging to conceptualise, operationalize, and measure the phenomenon (Seppänen et al., 2007). This is also true of the organisational trust model of Mayer et al. (1995) applied in this study; for while it is one of the most widely applied models in research, it was originally developed as a model "that was maximally generalisable" (Schoorman et al., 2007, p. 352) and therefore may not be accurate in specific contexts.

Focusing on asymmetric partnerships, we use context specific attributes from the VC and entrepreneurship literature that foster the understanding of the relationship between perceived trustworthiness and the willingness of the entrepreneurs. This approach enables us to describe the complex trust-related relationship between startup entrepreneurs and corporations in an asymmetric partnership scenario. Nevertheless, the unexplored phenomenon of trustworthiness and trust in asymmetric relationship merits a broad range of future research, including on the impact of context and time dimensions (Schoorman et al., 2007).

Although the scrutinised attributes contributing to perceived trustworthiness, and hence the willingness to partner, are derived from theory (Shepherd & Zacharakis, 2001), there might be more criteria that entrepreneurs take into consideration when assessing the opportunity to

launch an innovation-oriented partnership. Moreover, the partner selection criteria are dynamic and unlikely to be based on observations at a specific point in time.

While the conjoint experiment captures a large degree of the complex phenomenon, this study applies only a reduced design in order to keep the number of profiles to be evaluated at a level that did not overstretch the participants' cognitive capacity (Karren & Barringer, 2002). As a consequence, not all combinations of attributes were presented and only a limited number of interaction effects were analysed. Furthermore, the extensive experiment also explains the comparatively low response rate of 18%, which while still acceptable, is not ideal. While 191 entrepreneurs started to answer the questionnaires only 130 completed it, and we must acknowledge that perhaps the length of time required to complete the questionnaire (at an average of 28 minutes) deterred some respondents.

However, we assume that many large companies will continue to be interested in collaborating with startups, which should shift the entrepreneur into the research spotlight. Moreover, future research should also address how the perspective and requirements of large companies might diverge in the context of the selection of new, young, and mature ventures.

4.8 Conclusion

By linking the literature on asymmetric partnerships, trust, and entrepreneurial decision making, we moved the research spotlight on to the entrepreneur and his or her decision to partner with a large firm. In a conjoint experiment, we analysed the impact on the entrepreneur's willingness to partner of the contextual attributes contributing to the perception of trustworthiness and what role the entrepreneur's characteristics play in the evaluation. The results reveal the relevance of understanding the entrepreneur's perspective for large companies intending to launch a collaboration with new ventures. Signalling a high level of openness and the willingness to work on the grounds of concise rather than detailed contractual designs increases the entrepreneur's willingness to partner. Moreover, the study contributes to the theory of self-efficacy by providing possible explanations for the negative impact on the relationship between concise contracts and the entrepreneur's interest in committing to an asymmetric partnership.

Appendix

Appendix 4-1: Practice example of decision profiles

An interested company is characterised by the following attributes.

(Particular levels of every attribute will change hereinafter):

			
Low level of openness	**High** level of commitment	**High** Portfolio Similarity	**Concise** Contractual design

Please indicate how likely you are to enter into partnership with this company.

Very unlikely	Unlikely	Slightly unlikely	Neither	Slightly likely	Likely	Very likely
1	2	3	4	5	6	7

Appendix 4-2: Description of attributes of perceived trustworthiness for partner selection

Decision Criteria	Operationalisation
High level of openness	The large organisation is characterised by a transparent representation in the market. Information on the organisation is comprehensive and readily accessible. Structures can be discerned from outside and appropriate contact persons are easily reachable through several channels.
Low level of openness	The large organisation is characterised by a non-transparent representation in the market. Information on the organisation is limited and not readily accessible. Structures cannot be discerned from outside and appropriate contact persons are barely reachable and through only a few channels.
High level of commitment	The large organisation is characterised by taking quick and binding decisions and its decision makers tend to have a short reaction time. There is clear backing for partnerships by the top-level management.
Low level of commitment	The large organisation is characterised by its slow and nonbinding decisions and reaction times of its decision makers tend to be long. There is no clear backing for partnerships by the top-level management.
High level of portfolio similarity	The large organisation has a market portfolio which is similar to yours.
Low level of portfolio similarity	The large organisation has a market portfolio which is different from yours.
Concise contractual design	The large organisation ensures a concise and short implementation when creating legally binding documents (e.g. amendments to competition clauses, contractual penalties, and target agreements) and thus fulfills the minimum requirements.
Detailed contractual design	The large organisation ensures a detailed and comprehensive implementation when creating legally binding documents (e.g. amendments to competition clauses, contractual penalties, and target agreements) and thus fulfills the maximum requirements.

5 Discussion

All three presented studies are closely linked to the overall purpose of this dissertation, which presents exclusive insights on Asymmetric Partnership Management against the background of CE and OI literature.

The structured literature review (Study 1) bridges the gap between CE and OI and offers the very first insights on the interplay between CE and OI. As a result, the study provides six analytic categories which demonstrate existing areas of overlap. Focusing on asymmetric partnerships, two empirical studies were designed. Both studies present the phenomenon of partnerships between large firms and startups as a strategic activity under corporate innovation management. The second study explores the startup-oriented partnership capability of large corporations by identifying 15 elements of learning mechanisms in firms from Germany and Switzerland. The other empirical study (Study 3) focuses on the collaborative behaviour of 115 independent startup entrepreneurs and their willingness to partner with a larger counterpart.

Based on the integration of both partner perspectives and the elaboration of the individual findings of every study this dissertation provides a more holistic picture on Asymmetric Partnership Management as an individual research subject. In addition, it offers specific and practical insights into the relationship between large corporate firms and startup entrepreneurs, which might be beneficial for both actors. Consequently, this dissertation contributes in several theoretical and practical ways as the following paragraphs will illustrate in detail.

5.1 Implications for theory

5.1.1 Corporate Entrepreneurship theory

Corporate Entrepreneurship (CE) has increasingly attracted the scientific community as an independent research stream (Dess et al., 2003; Phan et al., 2009; Kuratko et al., 2017). It brings the idea of entrepreneurship on an organisational level, which is closely connected to the domain of innovation. Some authors have even started to use the terms CE and innovation management synonymously (Landström et al., 2015; Landström & Harirchi, 2018).

Study 1—the structured literature review—connects the two research domains CE and OI and emphasises existing but hidden links. A detailed review of 50 of a total of 283 papers facilitated the identification of six analytic categories ranging from innovation activities and instruments (such as idea competitions, spin-offs or asymmetric partnerships) to specific diagnostic tests

(Entrepreneurial Health Audits; Corporate Entrepreneurship Assessment Instrument) to measure the degree of CE and the innovativeness of an organisation. According to Sharma and Chrisman (1999) *innovation* is an independent CE activity alongside *corporate venturing* (the creation of new business organisations) and *strategic renewal* (the reconfiguration of existing businesses within a corporate setting).

Nevertheless, to date innovation has primarily been treated as an internal and optional activity, because the other two CE activities can exist without innovation; however, recent studies have extended the understanding of collaborative innovation and the degree of innovation within the CE literature by focusing on the external environment and resource fillers such as strategic partnerships (McFadzean et al., 2005; Shaw et al., 2005). The importance of strategic partnerships for corporate entrepreneurial firms are derived from their resource gaps. To deliver innovation outcomes, important aspects such as trustworthiness (in R&D partnerships) or an open and specified knowledge exchange (in learning partnerships) must receive further attention (Teng, 2007).

Based on the empirical findings this dissertation shows that asymmetric partnerships have become effective instruments to access resources connected to external innovation. The second study in particular emphasises that large corporate firms have begun to target startups as possible and promising innovation partners; not only as potential suppliers of ideas but also as executers of such ideas. To leverage this external innovation potential, large corporate firms develop a partner-specific partnership capability and invest in startup programmes and seek new, lean, collaboration-friendly conditions for co-creation projects. Even though joint ventures have been one preferred partnership instrument for large firms for a relatively long period of time (Teng, 2007), for startups they are too bureaucratic, cost intense, complex, and simply not practicable.

The third study provides detailed insights into the importance of trustworthiness for startup entrepreneurs and its effect on their partner selection choice. Specifically, it shows how large firms might influence the decision-making behaviour of startup entrepreneurs relating to collaborations.

To summarise, this dissertation extends the view of CE by addressing the aspect of managing innovation-oriented partnerships in general and asymmetric partnerships in particular taking the perspective of both managers and entrepreneurial individuals. This is aligned with emerging but under-researched concepts such as collaborative entrepreneurship (Ribeiro-Soriano &

Urbano, 2009), strategic entrepreneurship (Kuratko & Audretsch, 2009), and entrepreneurial decision making (Shepherd et al., 2015). The works referred to emphasise the importance of a strong and continuous focus outside the firm to generate a competitive advantage by identifying new external innovation sources to fully leverage the existing innovation potential for CE-oriented firms.

5.1.2 Open Innovation theory

Since 2003, OI has developed as an independent research stream within the innovation research field (West et al., 2014). The first article in this dissertation illustrates the close interconnections between OI and the fields of entrepreneurship and interorganisational partnerships bridged by a numerous different innovation activities and instruments such as asymmetric partnerships. Consequently, these activities enable an open interaction between large corporate firms and startups and make mutual innovation projects possible.

The second study empirically establishes that startups have become a serious and important innovation partner for large corporate firms. The article's large firm perspective was supported by harvesting data from 17 German and Swiss firms. The findings reveal that large corporate firms have started to anchor startups deeply within their OI strategy although enhancing the OI partner portfolio with startups is a relatively new concept. Van de Vrande et al. (2009) and Laursen and Salter (2014) point out that information on the innovation activities of micro firms with fewer than ten employees is not available, despite startups usually belonging to that group. Since Laursen and Salter (2006) originally presented their approach of external search strategies consisting of a breadth (number of external sources) and a depth dimension, only a few authors have also included emerging innovation actors such as startups and entrepreneurs within the breadth dimensions (Bahemia & Squire, 2010). Nevertheless, because many studies follow quantitative approaches and focus on these meta-level dimensions the presented study is a qualitative study, which centres on micro-activities and mechanisms in the context of Asymmetric Partnership Management including the perspective of executives from innovation management and business development departments of large firms.

The results demonstrate that the development of a startup-oriented partnership capability paves the way to an open and effective Asymmetric Partnership Management. The results also show that large firms are willing to adapt or change internal processes and structures or develop completely new activities, tools, or relationships to make asymmetric partnerships work. These findings contribute to current demands within OI research. Spieth et al. (2014) suggests

focusing on and analysing supporting conditions, capabilities, and enabling factors within the OI processes between entrepreneurs and established firms. The suggestion aligns with the work of West and Bogers (2014), who investigated a four-phase linear process to leverage external sources of innovation. That study finds that firms need competencies to integrate externally sourced innovation. Randhawa et al. assert that, "integrating service-dominant logic into OI research will inform managers on how to better establish organisational conditions for value co-creation, such as an open service innovation orientation and culture, which treat external partners as integrated, active, and value creating" (p. 768, 2016). Finally, the presented study provides an elaborated starting point for further OI research to develop specific partnership management models and processes between large firms and startups (Weiblen & Chesbrough, 2015; Jang et al., 2017), which focus on win-win situations through mutual innovation creation and commercialisation.

It also bolsters the findings of the literature review of Spender et al. (2017), which identified seven themes connecting startups with OI. The results of the empirical studies emphasise two themes, namely *the actors interacting with startups in OI processes* and *the entrepreneurial dimension in startups' OI processes*. Spender et al. (2017) and Usman and Vanhaverbeke (2017) recommend taking a stronger point of view on startups as decision makers and partnership managers especially when the balance of power is in play. The third study of this dissertation contributes to this void and provides rare insights into how startup entrepreneurs behave and select their partners within an innovation-oriented co-creation situation with large corporate firms. This might also be an interesting starting point for researching asymmetric negotiation processes in an OI context (Barchi & Greco, 2018).

5.1.3 Theory of partnership capability and trust

For large corporate firms, entering asymmetric partnerships with startups is one possible instrument to leverage external innovation potential within the market. For startup firms it can be a promising option to exploit their business opportunities by using the experience, network, and power of a large firm. But managing these types of partnerships effectively is a challenging task for both actors (Doz, 1987; Kelly et al., 2000; Alvarez & Barney, 2001; Prashantham & Birkinshaw, 2008; Weiblen & Chesbrough, 2015; Usman & Vanhaverbeke, 2017). Therefore, every organisation must learn to develop its own partnership capability to overcome these challenges and to achieve a strategic advantage (Ireland, 2002). Existing studies illustrate that the partnership capability construct has an enormous but still unexplored influence on the management and outcome of partnerships and consequently on the partnership itself (Heimeriks

& Duysters, 2007). Additionally, studies have started to carefully differentiate the partnership capability conglomerate by segmenting it into sub-dimensions such as individual partnership capabilities, partnership portfolio capabilities or dyad specific partnership capabilities (Wang & Rajagopalan, 2015). Referring to the context of asymmetric partnerships the partnership capability research helps to explain how large corporate firms use their ability to develop a partnership capability and ultimately learn to effectively manage partnerships.

The second study builds on this theory and pursues an empirical research design focusing on large corporate firms with more than 1,000 employees from Germany and Switzerland. Based on a theory-elaboration approach, using multiple case studies data from different sources are collected. One major source are interviews with leading corporate executives in the field of innovation and collaboration about their experience with the management of partnerships at the formation stage. Analysing the data, the study presents 15 learning mechanisms of large firms, which illustrate large firms' willingness to develop and enhance a startup-oriented partnership capability; that is, they invest into "upfront work" and specific mechanisms to pave the way for an effective Asymmetric Partnership Management.

These elements of learning mechanisms provide a good starting point for authors of quantitative studies who seek alternative mediators to only the partnership function itself of an organisation (Kale et al., 2002). Moreover, the results enhance the partnership capability construct by examining the context of asymmetric partnerships and give detailed information on micro-processes and activities (Kohtamäki et al., 2018). Generally, these findings contribute to the ongoing discussion in the little researched field of partner-specific partnership capabilities (Wang & Rajagopalan, 2015; Niesten & Jolink, 2015) within the dynamic capability environment (Vogel & Guettel, 2013).

While the second study exclusively focuses on large firms the third study investigates startup entrepreneurs and their perspective on large firms. Based on an experiment, the study provides more information on the partner selection behaviour of startup entrepreneurs during the formation stage of a co-creation partnership scenario. While Das and He (2006) emphasise that studies on partner selection criteria from an entrepreneurial firm perspective are rare, this study contributes to filling the gap. Additionally, the role of trust and (perceived) trustworthiness is an often-discussed topic within partnership research (Seppänen et al., 2007). There is empirical evidence that trust is a very critical success factor in the initial phase of partnerships (e.g. during partner selection activity) and in first-time partnerships (Shah & Swaminathan, 2008). In asymmetric partnerships, trustworthiness is an even more critical factor, because the trust

present is asymmetric by default and for this reason difficult for both partners to develop (Blomqvist et al., 2005; Wang et al., 2015).

This makes it necessary for the involved actors to proactively address it. Nevertheless, large firms as the dominant partner should be willing to appear as trustworthy as possible to startup entrepreneurs, because trustworthiness is dependent on the expectations and the perception of the individuals, and therefore a significant factor in their partner decision-making process. Consequently, this dissertation also contributes to the (asymmetric) trust research as an important part of the asymmetric partnership literature. By focusing on the direct relationship between four attributes of perceived trustworthiness (of a large corporate partner) and the entrepreneurs' willingness to partner, the third study includes exclusive insights from an entrepreneurial perspective and contribute to a holistic analysis.

5.1.4 Theory of entrepreneurial decision making and application of experimental methods

While several studies on partnerships look at the innovation partners as a heterogenic portfolio (Nieto & Santamaría, 2007), this dissertation opt for an approach with an exclusive focus on dyadic partnerships between large firms and startup entrepreneurs. Studies on Asymmetric Partnership Management have widely ignored the perspective of startup entrepreneurs as decision makers in their entrepreneurial process surrounded by uncertain, dynamic conditions (Sarasvathy, 2001; Shepherd et al., 2015). Because entrepreneurial decision making is still an under-researched phenomenon, the entrepreneur is put at the centre of the research.

Consequently, the purpose of the third study is to investigate when startup entrepreneurs are willing to engage in partnerships with large companies with reference to the entrepreneurs' characteristics. Based on a conjoint experiment partner decisions from 115 startup entrepreneurs are collected. The results suggest that a high level of openness of the large firm and concise contractual design rather than a very detailed design have a positive impact on entrepreneurs' willingness to partner. The findings are especially relevant for large companies wishing to understand the concerns and preferences of entrepreneurs when expanding their innovation partner portfolio, whether that is to access different resources, competences, and ideas, or to profit from the speed and entrepreneurial spirit of smaller partners (Weiblen & Chesbrough 2015).

This study contributes in particular to entrepreneurial decision-making literature and the application of experimental state-of-the-art methods, namely conjoint methodology applied within the entrepreneurship domain. Shepherd et al., (2015) provide a map of entrepreneurial decision-making research and identify three main categories and seven different sub-categories within the entrepreneurial decision-making literature. Even though partnerships with external actors are not explicitly mentioned in this study, the form is implicitly included owing to the options for and modes of opportunity exploitation. The decision-making process of entrepreneurs and which factors influence it during the formation stage in a partner selection scenario has been neglected in research to date (Das & He, 2006) and only a few researchers have recognised the potential of investigating micro-events during the entrepreneurial process such as partnership decisions (Hsu et al., 2017). The third article contributes to Reuer et al. (2006) and Drover et al. (2014) who encourage scholars to investigate partnership formation sub-processes to increase the understanding of entrepreneurial firms in interfirm cooperation. While partner selection criteria largely seem to be treated as generalised constructs (Cummings & Holmberg 2012), the study also considers a more realistic situation which fits well with an entrepreneur's perspective (Shepherd & Zacharakis, 2001).

There is growing interest in using methodological experiments and multilevel analysis to enhance entrepreneurship research (Lohrke et al., 2010; Shepherd, 2011; Kraus et al., 2016; Hsu et al., 2017). Hsu et al. (2017) found that only 2.14% of the published articles in entrepreneurship journals have used experimental methodologies. Consequently, the third article of this dissertation contributes to this promising field by using the experimental, state-of-the-art method of conjoint analysis to research the complex requirements of the entrepreneurial decision making. Prior studies mostly use retrospective interviews or surveys which lead to post-hoc data. Moreover, they often focus only on entrepreneurial decision makers and their characteristics in combination with entrepreneurial activities or tasks. In addition, some former experimental entrepreneurship studies follow a role-play research design, using business and economics students to simulate the behaviour of entrepreneurs instead of collecting data from real entrepreneurs (Lévesque & Schade, 2005; Haynie et al., 2012). To overcome these weaknesses, conjoint methodology is used in a controlled research design to collect real-time data. Here, a broader perspective is adopted by also analysing the interfaces between entrepreneurs, their activities, and their decision-making biases in a specific environmental context. Finally, the findings of the third study also offer first insights into the emerging topic of entrepreneurial networking in terms of entrepreneurs partnering behaviour in asymmetric partnership scenarios (Vissa, 2012; Ebbers, 2014; Engel et al., 2017).

5.2 Implications for Practice

In addition to providing implications for theory this dissertation also offers helpful insights for innovation and partnership managers of large corporate firms, startup entrepreneurs, and startup executives.

5.2.1 Large corporate firms

The findings of this dissertation indicate that management of large corporate firms should note the following three aspects when they are interested in working with startup firms.

First, entering partnerships with startups offers the chance to unlock a still widely unused innovation potential that did not exist. One of the main reasons is the strong shift of focus from managing ideas to executing projects enabled through a worldwide access to information and technologies and driven by motivated and highly educated individuals and autonomous teams. The second study illustrates that several large firms in Germany and Switzerland have started to proactively open up their firm borders and to build up startup-friendly gateways and consistent touchpoints. While most firms are still in learning mode, they are pursuing the goal of developing their own startup-oriented partnership capability. If large firms really want to leverage this specific capability, they must invest in startup-friendly measures and activities. Consequently, the ultimate goal is to become the innovation partner of choice by providing complementary collaboration assets to startup firms and entrepreneurial talents.

Second, given the fact that ultimately collaboration occurs at the individual level of an organisation, innovation managers must be qualified to fulfil the role of a partnership manager, which is similar to a relationship promoter (Walter, 1999; Pemartín et al., 2017). The aim of the role is to foster informal, trustful, and sustainable relationships. To do so, managers need a high degree of empathy, a balanced mindset with a focus on win-win collaborations, a powerful network within the firm, and an open communication style. As the third study shows, signalling trustworthiness is one of the most important aspects to establish a partnership. Trust is the most critical success factor (Shah & Swaminathan, 2008) and even more important in asymmetric partnerships, where the power is unequally distributed and trust is asymmetric by default (Blomqvist et al., 2005; Wang et al., 2015).

Third, innovation managers must become the driving force to transform the innovation management department from a deep-seated pipeline of single innovation projects to a partner-friendly, innovation-centric and platform-oriented ecosystem. This might turn out to be a unique

strategic advantage for large firms especially in the digital age. The often-internal linear innovation processes do not fulfil the needs of an open and linked network any longer (Berkhout et al., 2006). Instead, an open platform is needed to match and merge inside-out activities such as resources and projects (intrapreneurs) and outside-in activities (external entrepreneurs). Alternative ways must be found to reach a high degree of flexibility in terms of realizing innovation projects and partnerships. Flexible project budgets and reliable project controlling are both challenges to be overcome. Moreover, managers must be encouraged to make faster and irreversible decisions by terminating unpromising innovation projects and overcoming the cognitive "sunk cost fallacy" bias.

5.2.2 Startup entrepreneurs

Beyond the implications for managers, the results are also relevant for entrepreneurs. Startup founders who enter first-time partnerships usually have little or no experience in estimating what it means to enter partnerships with a larger partner.

First, this dissertation suggests startup entrepreneurs might acquire an inspiration and new ideas for growth opportunities through complementary assets and skills provided by many large firms active in the market. Because sales and solution development can be an intense and long process it might be a meaningful strategy to pre-evaluate different growth path options even when collaborating does not initially seem the best alternative.

Second, entrepreneurs gain detailed knowledge on the management of partnerships from large firms. The findings of the studies presented here show they can learn to prepare their own collaboration strategy and get a feeling for the broad range of possibilities that collaborations offer. Therefore, it is important to maintain a rational, critical attitude and to suppress any inclination to distrust without foundation. Startup entrepreneurs should carefully collect insights in terms of processes and activities from large firms and look into the corporate collaboration black box, which will become increasingly transparent for the startup community in the future.

Lastly, this dissertation supports entrepreneurs by extending insights into entrepreneurial decision making, which include the opportunity to reflect on their own decision making behaviour. Employing the analytical criteria outlined above might put them in a strong position to evaluate what is important to them in terms of partner selection before actively starting collaboration. This could guide entrepreneurs towards well-thought-out decisions.

5.3 Directions for future research

Although this dissertation covers different perspectives and has implications for research and practice, it leaves room for further research in the field of Asymmetric Partnership Management. Referring to the CE and OI literature many authors emphasise that this specific research subject was overlooked in the past despite it connecting several research domains. Because of the increasing innovation and market and innovation pressure, many large organisations have started to sharpen their OI strategy and to implement new startup-friendly activities and measures into their corporate innovation management. Accordingly, more research on asymmetric partnerships and their management can be expected within the next years. Reflecting upon this dissertation, leads towards further promising aspects that merit investigation in the future.

5.3.1 Towards research on partner-specific partnership capabilities

Developing an individual partnership capability for large corporate firms to improve their partnership management is an interesting field of research and existing studies have just scratched the surface of it (Kohtamäki et al., 2018; Wang & Rajagopalan, 2015). The outcome effects in particular must be carefully analysed depending on the various stages of the whole partnership development process (e.g. formation, operation, outcome) (Spekman et al., 1998; Das & Teng, 2002). This equally applies to an individual partnership capability of startup firms (Usman & Vanhaverbeke, 2017) that are willing to enter partnerships with large companies to enhance innovation and explore scalability. Moreover, research on partner-specific partnership capabilities (with a focus on individual asymmetric partners) such as “new venture partnering capability” (Zaremba et al., 2017) is a new and interesting field with research potential. This potential can be also seen in portfolio partnership capabilities (with a focus on several asymmetric partners) where more studies can be expected. From an innovation and partnership management perspective large firms are potentially faced with a trade-off situation between following primarily dyadic and individual startup partnerships or investing into their portfolio capabilities that are realised through standardised innovation vehicles such as corporate accelerators (Kohler, 2016; Kanbach & Stubner 2016; Pauwels et al., 2016; Kupp et al., 2017; Battistella et al., 2017) or (open) incubators (Becker & Gassmann, 2006; Eveleens et al., 2017) to profit from startup cohorts, which demands similar characteristics (e.g. technology focus, sector focus, customer focus, etc.).

5.3.2 Towards a balanced Asymmetric Partnership Management research

The two empirical studies of this dissertation cover the perspectives of large corporate firms and startup entrepreneurs. What this dissertation does not provide are "neutral" or balanced studies which include both perspectives with the same research setup and identical research questions. However, it is necessary to treat both participants equally and therefore, developing a parallel research design which reflects the needs of both partners (Jang et al., 2017). Qualitative and quantitative studies that use a balanced data sample are still rare. Hora et al. (2018) provide a sample with 35 matched pairs of dyadic partnerships consisting of interviews with 35 managers of large firms and 35 entrepreneurs or executives of startups. For example, studies such as Pérez et al. (2012) or Blomqvist et al. (2005) only investigate three and one dyadic partnerships between both actors respectively. Many other studies usually focus on one specific actor. Authors of future studies should additionally pay attention to the specific context of the partnerships analysed such as industry environments, innovation types and co-creation subjects (e.g. business model innovation, technology development, or new product development), the functional type of partnerships (e.g. non-equity-related or equity-related), or the type of partners (e.g. startups, universities or consulting firms).

5.3.3 Towards research on partnership management focusing on the intrapreneurial potential

Another subject of research is the relationships between large corporate firms and their former employees and potential future external collaboration partners (startup entrepreneurs). Audia and Rider (2005) describe former employees of large firms and entrepreneurs as "organisational products", and state that 60% to 70% of independent entrepreneurs' ideas originally come from their prior employment. Consequently, large firms must recognise these people as embodying important innovation potential and find ways to provide suitable solutions for them such as intrapreneurship programmes (Pinchot, 1985) or even mixed collaboration programmes. The effects of binding motivated employees through intrapreneurial programmes or fostering collaborations with competitors provide a wide range of interesting research questions, which are also closely connected to entrepreneurial decision-making research (Shepherd et al., 2015).

5.3.4 Towards longitudinal partnership management research

A large number of partnership studies collect their data at a particular point in time, mostly before or during the formation phase (Kelly et al., 2002; Reuer et al., 2006). Partnerships are

dynamic in nature and develop over time. Therefore, future studies should select a longitudinal research design from the formation until outcome stage. Following this approach, it is possible to provide specific insights in terms of changes or effects on different levels during the whole partnership life cycle. These research levels could be related to the partnership or the partners themselves such as partner-related criteria (e.g. goals, motivation, culture, trust, communication, or commitment) or task-related criteria (such as internal or external processes, resources, reputation, and sales) (Das & He, 2006). Research could also focus on the short- and long-term performance outcomes and their outcome distribution among the involved partners (Gulati, 1998; Laursen & Salter, 2014). Because building a scalable company alone takes several years at least (Weiblen & Chesbrough, 2015) large firms still need stamina, patience, and generally low expectations when they enter sustainable collaborations with startups.

5.4 Conclusion

By focusing on Asymmetric Partnership Management, this dissertation brings two different research streams and two different partner perspectives together. Linking CE and OI literature through the innovation-oriented and asymmetric partnership literature is an important step forward to bridging the gap between the entrepreneurship and innovation research streams by emphasising only one of many existing overlaps. Creating effective partnerships between large corporate firms and startup entrepreneurs is a challenging managerial task. In the past, many studies have shown that large firms have a lack of knowledge about startups and have gone on to carefully study the potential challenges that could easily lead to an unsatisfactory outcome for at least one partner.

Therefore, this dissertation has focused on large corporate firms and how they learn to interact with startups. Today an increasing number of large firms see startups as a vital partner within their innovation ecosystem and not only as competitors or simply as an idea supplier. Enhancing partnership management research and the theory on partnership capability with focus on independent startup entrepreneurs and their perceived trust-based behaviour offers a more holistic picture of the complexity in a field also driven by entrepreneurs heterogenic characteristics. Because the number of failed partnerships is still high, it is worth scrutinising how the interaction between asymmetric actors might be improved so as to make these partnerships valuable to both and to leverage the total innovation potential. Following Spender et al., (2017) more studies that combine different mixing methods, concepts and theories from

different disciplines are needed to explain the complex and multidisciplinary characteristics of interactions between large corporate firms and startups within an OI ecosystem.

Large corporate firms will master the innovation challenges by signalling trustworthiness and building trust in asymmetric partnerships and establishing a goal-oriented and partner-specific form of partnership management. For these firms, partnerships with startup entrepreneurs will become an essential innovation instrument to solve upcoming challenges and to overcome the old paradigms of closed innovation.

"Yet, in order to craft successful collaborations between large companies and startups it is necessary to understand the perspective of both types of organisations. Their goals and processes have to be aligned with each other and that is only possible when both partners understand the other's point of view" (2017, p. 172).

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